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FEDERAL - STATE - PRIVATE

# SNOW SURVEY and WATER SUPPLY FORECASTS for OREGON

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE and

OREGON AGRICULTURAL EXPERIMENT STATION

and

STATE ENGINEER of OREGON

Data included in this report were obtained by the agencies named above in cooperation with other Federal, State and private organizations.

FEB. 1, 1960

## UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

#### PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
COLORADO AND STATE OF UTAH	MONTHLY (JANMAY)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER AND OTHER AGENCIES
Columbia and States of————————————————————————————————————	MONTHLY (JANMAY)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
UPPER MISSOURI AND STATE OF MONTANA	MONTHLY (FEBMAY)	BOZEMAN. MONTANA	MONT. AGR. EXP. STATION
WEST-WIDE	OCT.1. APR.1. MAY 1	PORTLAND, OREGON	ALL COOPERATORS
STATES			
ARIZONA	SEMI-MONTHLY(JAN.15 - APR.1)	•	SALT R. VALLEY WATER USERS ASSOCIATION ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO	MONTHLY (FEB. MAY)		COLO. AGR. EXP. STATION COLO. STATE ENGINEER N. MEX. STATE ENGINEER
NEVADA	MONTHLY (FEBAPR.)	RENO. NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JANMAY)		ORE. AGR. EXP. STATION OREGON STATE ENGINEER
Washington	. MONTHLY (FEBMAY)	SPOKANE, WASHINGTON	WASH. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEBJUNE)	CASPER. WYOMING	WYOMING STATE ENGINEER
Copies of these various	reports may be secured	from: Head, Water Suppl Soil Conservation 209 S. W. Fifth A	
	PUBLISHED BY 0	THER AGENCIES	
REPORT	ISSUED	AC	SENCY
BRITISH COLUMBIA	MONTHLY (FEBJUNE)		R RIGHTS BR., DEPT. OF LANDS AMENT BLDG., VICTORIA. B.C.,
CALIFORNIA	MONTHLY (FEBMAY)	CALIFORNIA DEPT. C	F WATER RESOURCES, SACRAMENT

## FEDERAL - STATE - PRIVATE COOPERATIVE

SNOW SURVEY and WATER SUPPLY FORECASTS

for OREGON

ISSUED

**FEBRUARY 8, 1960** 

Report prepared by

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SOIL CONSERVATION SERVICE 209 S.W. 5TH AVE., PORTLAND 4, OREGON

Issued by

THOMAS P. HELSETH

STATE CONSERVATION IST

SOIL CONSERVATION SERVICE

F. EARL PRICE

DIRECTOR

OREGON AGRICULTURAL

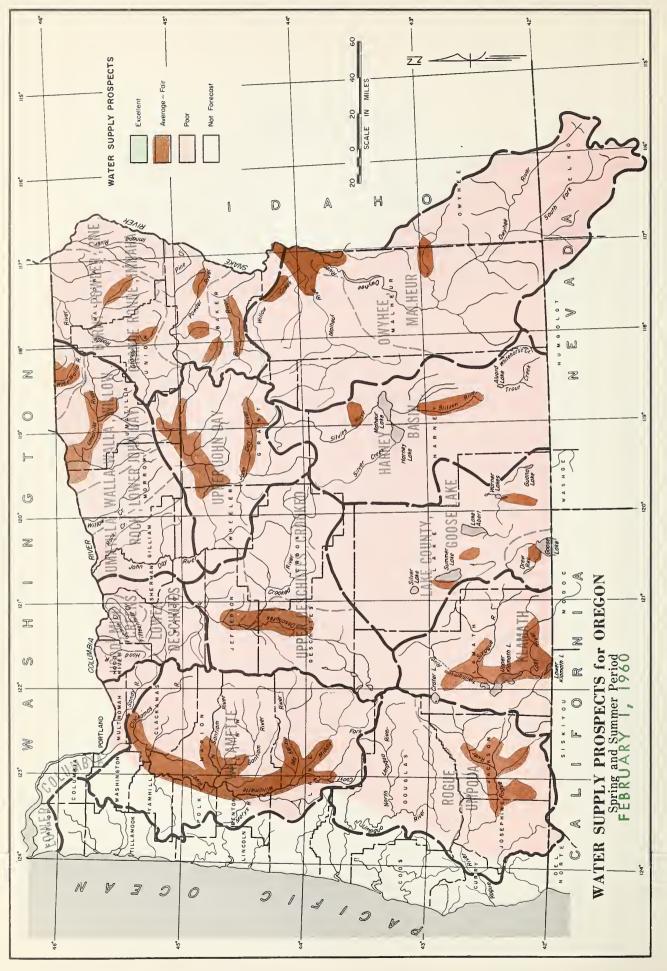
EXPERIMENT STATION

LEWIS A. STANLEY
STATE ENGINEER
STATE OF OREGON



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## WATER SUPPLY OUTLOOK for OREGON

FEBRUARY I, 1960

Oregon's water supply outlook for the spring and summer months of 1960 varies from only "fair" to "very poor" and is very similar to last year's "short" water situation. Total stored water supplies are far below normal and watershed soils are much dryer than normal under the mountain snow-pack which is exceptionally short of water. Spring and summer streamflow is forecast to range between 40 and 86 percent normal.

### SNOW-COVER:

Water content of the mountain snow-cover in Oregon averages about 50 percent of the February 1st normal. The snow-pack is poorest in the Hood River-Wasco County area, with conditions in Willamette and Deschutes-Crooked watersheds nearly as bad.

In a normal winter there is usually about two-thirds of the total winter's snow-pack on the ground by February 1st. This year, however, the snow accumulation to date is only 32 percent of a normal winter's total.

### **SOIL-MOISTURE:**

Soils under the snow-pack in the mountain watersheds are fairly well "primed" by the fall rains in the northern third of the state. However, soils in the rest of the state are dryer toward the south and will soak up valuable snow-melt water.

## RESERVOIRED WATER:

Twenty-five important irrigation reservoirs over the state average only 68 percent of the normal stored water for February 1. Some of the smaller reservoirs are at very low levels after a dry season last year and little if any "carry-over" storage.

## PRECIPITATION:

January precipitation <sup>1</sup> in Oregon varied from 39 percent above normal at Burns to 52 percent below normal at Klamath Falls. The southeast corner of the state averaged 29 percent above the January normal but is still only 62 percent of normal for the October through January period. The state as a whole averaged only 82 percent of the January normal at 16 selected valley stations.

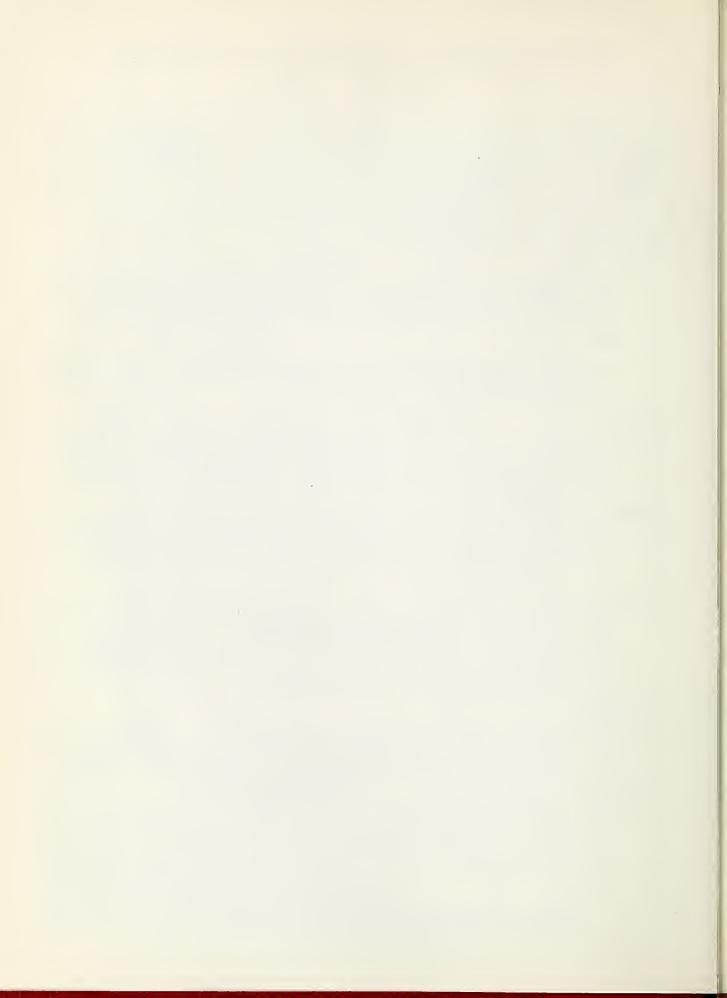
## STREAMFLOW:

The streamflow outlook for the coming irrigation season (April through September) is relatively poor. Forecasts of spring and summer runoff vary from 40 and 44 percent of normal on the Silvies and Owyhee to 86 percent of normal on the Walla Walla.

Flow of key Oregon streams <sup>2</sup> during the period from October 1 to the end of January has varied from a high of 91 percent normal on Hood River to lows of 25 percent normal on the Umpqua and 38 percent normal on both the Rogue and Middle Fork of Willamette.

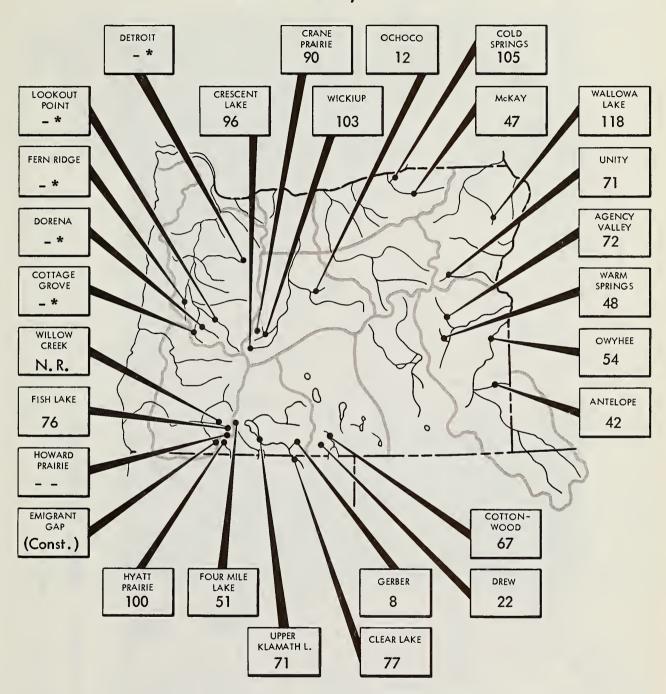
<sup>(1)</sup> From preliminary data furnished by U.S. Weather Bureau, Portland, Oregon.

<sup>(2)</sup> From preliminary data furnished by U.S. Geological Survey, Portland, Oregon.

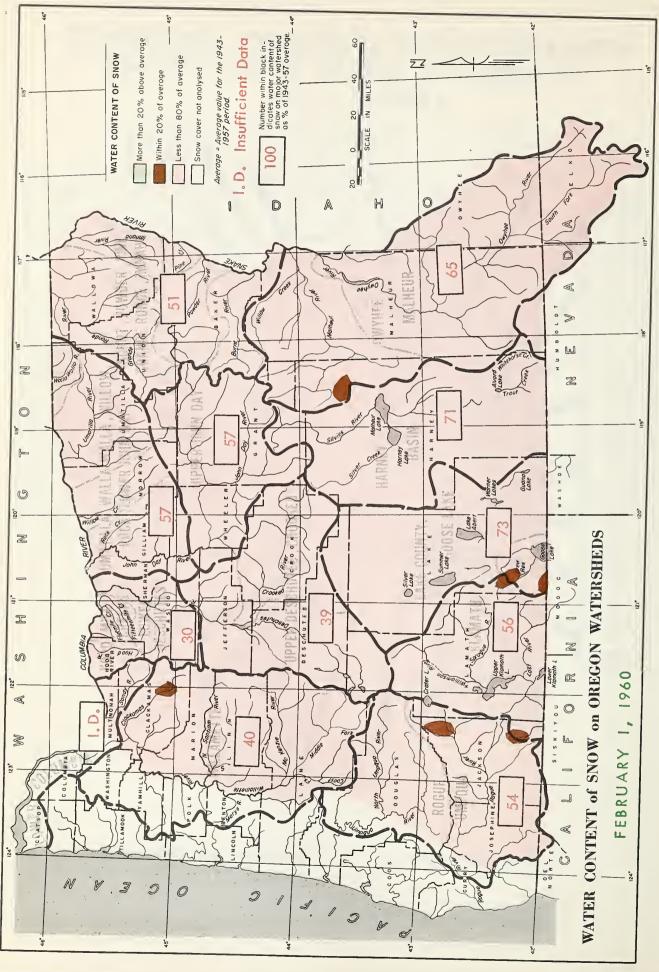


## STORAGE STATUS of OREGON RESERVOIRS as percent of 1943-57, 15 year average

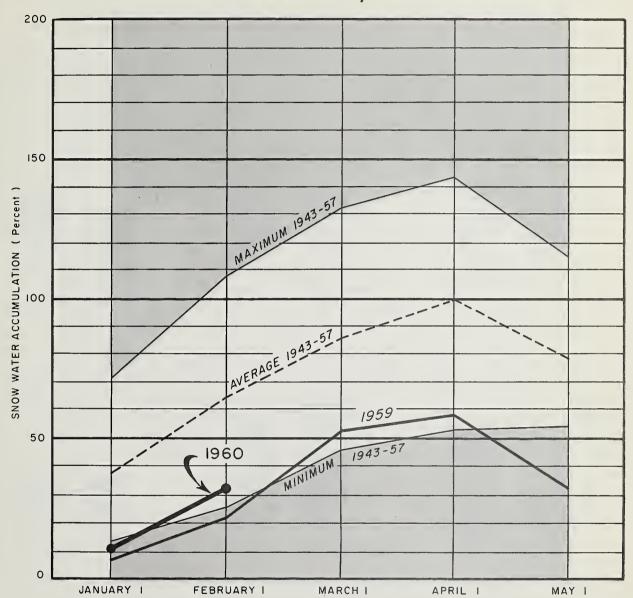
FEBRUARY 1, 1960



\*-Multiple purpose reservoir - space reserved primarily for flood runoff. N.R.-No report.



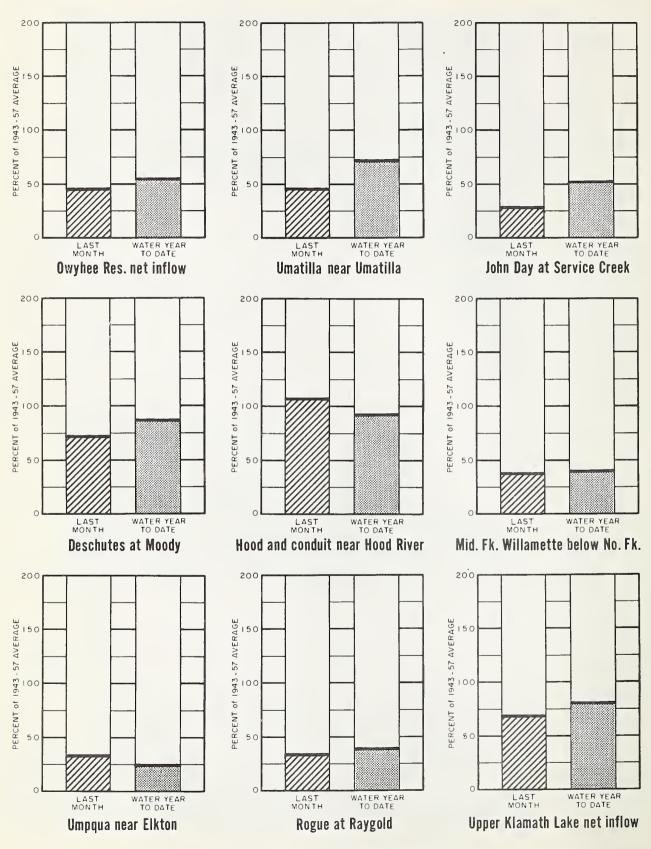
## SNOW WATER ACCUMULATION in OREGON FEBRUARY 1, 1960



Oregon's accumulation of snow water continues to be much below normal after receiving a little less than a normal increase during January. Usually about 65 percent of the year's total snow-pack has accumulated by February 1. This year, only 32 percent has been observed to date.

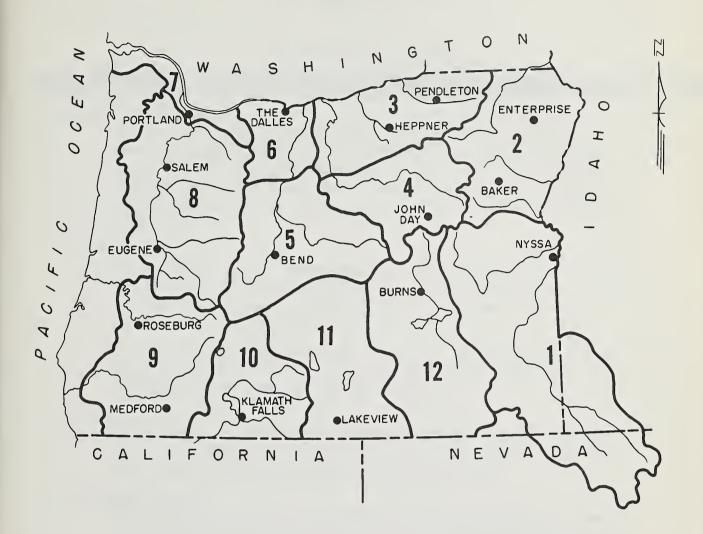
## CURRENT OREGON STREAMFLOW

FEBRUARY I, 1960



## VALLEY PRECIPITATION in OREGON a

FEBRUARY 1, 1960



PRE	PRECIPITATION as PERCENT of the 1943 - 57 AVERAGE							
STATION	LAST MONTH	WATER b YEAR TO DATE	STATION	LAST MONTH	WATER b YEAR TO DATE			
Baker Apt. Bend Burns Enterprise Eugene Apt. Heppner John Day Klamath Falls Apt.	136 63 139 64 71 117 51 48	54 33 68 55 46 54 36 32	LAKEVIEW MEDFORD APT. NYSSA PENDLETON APT. PORTLAND APT. ROSEBURG APT. SALEM APT. THE DALLES	106 67 134 75 67 62 64 54	50 35 76 45 64 48 49			



# WATER SUPPLY OUTLOOK OWYHEE, MALHEUR WATERSHEDS OREGON

as of FEBRUARY I, 1960

## U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The outlook for 1960 irrigation water supplies in Malheur County is "very poor" except for those lands served from large reservoir facilities where the outlook is a little brighter but still only "fair". Although the present mountain snow-cover is somewhat better than last year at this date, it is still only 65 percent of the February 1 normal and it lies on extremely dry watershed soils.

## SNOW-COVER

Water contained in the mountain snow-cover is far below normal for this date but is 50 percent greater than last year. Last year there was no snow on the lower elevations, whereas this year snow is present on the lower areas but in below normal amounts.

In a normal winter about 73 percent of the total winter's snow-pack is on the ground by February 1st. This winter, however, only 50 percent of the normal total winter's snowfall has accumulated.

#### SOIL-MOISTURE

The soil-mantle on the mountain watersheds is extremely dry in most parts of the county. These dry soils will soak up 5 to 8 inches of the early snow-melt water to prime the watersheds for actual streamflow.

#### RESERVOIRED WATER

Total stored water in four big reservoirs of the area is 54 percent of the 15 year normal for 1943 through 1957 and less than half the amount in storage one year ago. Deficient water storage is due principally to lack of "carry-over" from last year which was also a "short" water year.

## **STREAMFLOW**

Flow of the Owyhee has averaged only one-half normal since October 1st and other streams have likewise been much below normal in flow.

Forecasts of streamflow for the irrigation period, April through September, are all much below normal with flow of the Owyhee expected to be about 47 percent and the Malheur about 68 percent of the 15 year normal period, 1943 through 1957.

The smaller streams of the county will be extremely short unless above normal snowfall or precipitation are received.

Report prepared by:

W. T. FROST ANO BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

## WATER SUPPLY OUTLOOK expressed as "Poor", "Fair" "Average" or "Excellent"

RESERVOIR	STORAGE	(1,000	Ac.	Ft.)

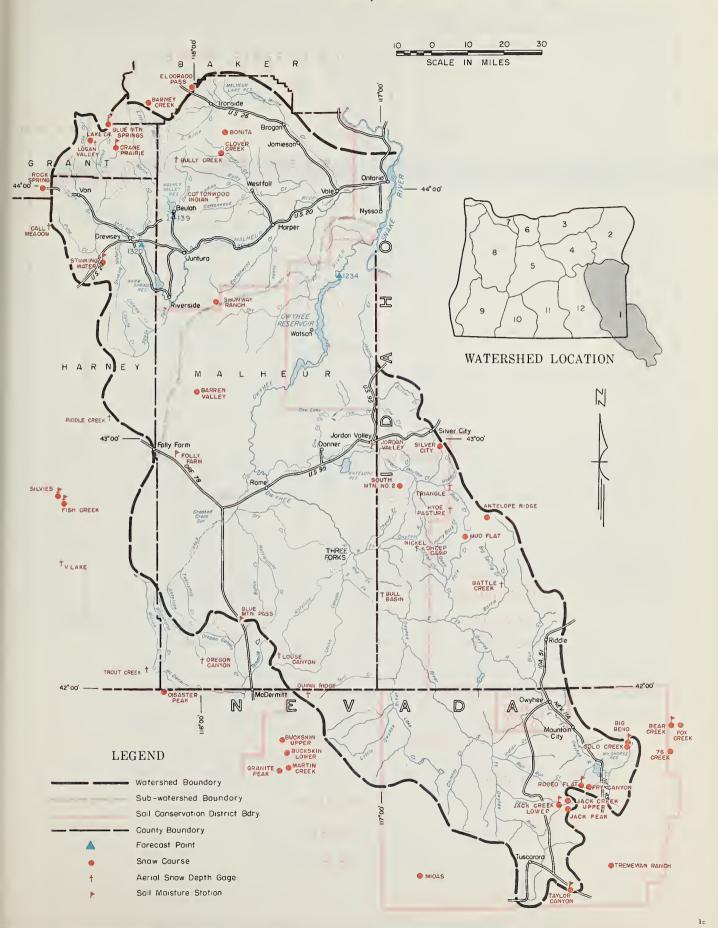
STREAM or AREA	FLOW I	PERIOD	RESERVOIR	USABLE	MEASUR	ED (First	
STREAM OF AREA	SPRING SEASON LATE SEASON	CAPACITY	THIS YEAR	LAST YEAR			
Boulder Creek		D					
Bully Creek	Fair Fair	Poor	Agency Valley	60.0	19.7	23.9	
Cow Creek	Fair	Poor Poor	Antelope	36.5	2.1		
Jordan Creek	Fair Fair		Owyhee	715.0	225.0		
Fordan Creek Fordan Valley Irrig. Dist.		Poor Fair	Warm Springs (	191.0	31.4	119.6	
AcDermitt Creek	Fair	Poor					
Oregon Canyon Creek	Fair	Poor	i e				
Owyhee Project	Average						ı
Sucker Creek	Fair	Poor					ı
Cen Mile Creek	Poor	Poor	9			ł	Ì
Vale, Oregon Irrig. Dist.	Average						ı
Warm Springs Irrig. Dist.	Average	Fair					ı
Villow Creek	Fair	Fair					ı
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## STREAMFLOW FORECASTS "(1,000 Ac. Ft.)

	FORECAST POINT	FORECAST FORECAST PERIOR		NORMAL b	THIS YEAR AS PERCENT
NO.	эмам	THIS YEAR			OF NORMAL
1320	Malheur near Drewsey	55	April-Sept.	81	68
139	Malheur North Fork at Beulah $^d$	45	April-Sept.	64	70
1234	Owyhee Reservoir net Inflow <sup>g</sup>	200 180 250	April-Sept. April-July March-July	430 412 524	47 44 48

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) USBR records of inflow.

## OWYHEE, MALHEUR WATERSHEDS



WOW		CUR	RENT INFORMA	TION		PAST RECORD	
SNOW COURSE		DATE OF	SNOW DEPTH	WATER	WATER CONT	ENT (inches)	YEARS IN
NAME	ELEVATION	SURVEY	(Inches)	CONTENT (Inches)	LAST YEAR	NORMAL b	NORMAL
Antelope Ridge	5900	1/30	13	3.2	1.2		0
Barney Creek	5950	c					
Battle Creek <sup>e</sup>	5700	2/3	12	2.8	2.6		0
Bear Creek	7800	1/26	29	7.5	10.7		3
Big Bend	6700	1/29	18	3.7	3.0	8.4	10
Blue Mountain Springs	5900	1/26	28	. 6.9	5.8	11.0	14
Buckskin, Lower	6700	c			1 3.3	11.0	
Buckskin, Upper	7200	c					
Bull Basine	5600	2/3	11	2.5	1.9		0
Bully Creek e	5300	2/3	14	3.2	0.0		0
Call Meadows e	5340	2/3	22	5.1			0
Clover Creek	4100	1/26	18	4.0	0.0		1
Cottonwood-Indian e	4320	2/3	14	3.2			0
Crane Prairie	5375	c c		0.2			U
Denio Creek e	6000	1/29	6	1.4	0.9		0
Disaster Peak	6500	c c		1.4	0.3		U
Eldorado Pass	4600	1/27	13	2.9	2.4		2
Fish Creek <sup>e</sup>	7900	1/29	36	8.3	7.3		0
Fox Creek	6800	1/25	18	4.1	4.6		3
	6700	2/1	19	4.2	1.2	6.6	
Fry Canyon Gold Creek	6600	1/29	14	3.1	2.4	4.8	8 9
Granite Peak	7800	1/29	24	5.8	5.6	4.0	2
Hyde Pasture <sup>e</sup>	5800	2/3	19 15	4.4 3.1	2.4 1.5		0 2
Jack Creek, Lower	6800	2/1	25	ì			_
Jack Creek, Upper	7250	2/1		5.8	4.6		2
Jack Peak	8420	2/1	34	8.5			0
Lake Creek	5120	1/27	23	6.7	3.7		2
Logan Valley e	5100	2/3	22	5.1	2.8		0
Louse Canyon e	6440	2/3	13	3.0	1.7		0
Martin Creek	7200	1/27	22	4.9	4.2		2
Midas	5700	c					
Mud Flat	5500	1/30	13	2.6	1.1		0
Nickel Sheep Campe	5450	2/3	9	2.1	2.4		0
Oregon Canyon e	7240	2/3	19	4.4	1.3		0
Quinn Ridge e	6200	2/3	16	3.7	1.4		0
Riddle Creek e	5300	1/29	12	2.8	1.3		0
Rock Springs	5100	1/27	18	3.7	1.0	4.7	15
Rodeo Flat	6800	2/1	18	4.0	0.8	6.1	8
Shumway Ranch	4500	1/25	12	2.7	0.0		1
Silver City	6400	1/31	29	8.4	5.1	11.8	7
Silvies <sup>e</sup>	6900	1/29	26	6.0	2.0		0
South Mountain No. 2	6340	1/27	24	5.1	3.9	8.8	15
Stinking Water	4800	1/27	15	3.7	Т	3.5	14
Taylor Canyon	6200	2/2	21	4.9	1.9		2
Tremewan Ranch	5700	2/2	9	1.7	0.0		3
Triangle e	5150	2/3	9	2.1	0.5		0
Trout Creek e	7800	1/29	12	2.8	2.0		0
76 Creek	7100	1/29	19	4.0	4.9		3
"V" Lake e	6600	1/29	10	2.3	2.0		0

# WATER SUPPLY OUTLOOK BURNT, POWDER, PINE, GRANDE RONDE, IMNAHA WATERSHEDS OREGON

 $as\ of$  FEBRUARY I, 1960

#### U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

#### GENERAL OUTLOOK

The outlook for 1960 irrigation water supplies in Wallowa, Union and Baker Counties of northeastern Oregon is mostly "fair" to "poor" with the probability that many acres will have less water than last year. Only those lands served from stored water supplies will have a near normal year.

### SNOW COVER

Water contained in the mountain snow-cover is only 51 percent normal for this date and 83 percent of last year.

In a normal winter about two-thirds of the total winter's snow-pack is on the ground by February 1st. This year, however, the snow accumulation to date is only 34 percent of a normal winter's total.

## SOIL-MOISTURE

The soil-mantle under the mountain snow-pack is well wetted in the northern part of the area but dryer conditions are found to the south. There, the soils are still very dry and will require much moisture from the melting snow to satisfy their deficiency.

## RESERVOIRED WATER

Stored water supplies are actually slightly above normal but are only 77 percent of last year at this date. With average winter conditions these reservoirs can be brought up to satisfactory levels.

## STREAMFLOW

Forecasts of streamflow for the irrigation period, April through September, are all much below normal with the highest being Catherine Creek which is expected to flow 81 percent of the 1943-57 average. Both the Grande Ronde and the Burnt Rivers are forecast at 65 percent of normal while the Powder is estimated at 77 percent normal. Flow of the major Wallowa River tributaries and of the Imnaha River is expected to be about 70 percent normal.

Many small streams heading in low-elevation watersheds will have a very limited flow this year with late season water supplies extremely short.

Report prepared by:

W. T. FROST AND BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE
209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

## WATER SUPPLY OUTLOOK "Average" or "Excellent"

## RESERVOIR STORAGE (1,000 Ac. Ft.)

STREAM or AREA	FLOW	PERIOD	RESERVOIR	USABLE	MEASUR	ED (First o	f Month)
STREAM OF AREA	SPRING SEASON	LATE SEASON	RESERVOIR	CAPACITY	THIS YEAR	LAST YEAR	NORMAL 6
Alder Slope Baker Valley Big Creek Clover Cr. (nr. N. Powder) Cove Durkee Eagle Valley Elgin Enterprise - Joseph Hereford - Bridgeport Imnaha River LaGrande - Island City Lostine - Wallowa North Powder R Wolf Cr. Pine Valley Powder River - Elk Creek Summerville Sumpter Valley Union - Hot Lake Unity	Fair Fair Poor Fair Fair Fair Average Average Fair Fair Fair Fair Fair Fair Fair Fair	Poor Fair Poor Poor Poor Poor Poor Fair Poor Fair Poor Fair Poor Poor Poor Poor Fair Fair Poor Poor Fair Fair Fair Fair Fair Fair	Unity Wallowa Lake	25.2 37.5	5.1 28.4	9.5	7.2 21.2

## STREAMFLOW FORECASTS "(1,000 Ac. Ft.)

	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL 6	THIS YEAR AS PERCENT
NO.	NAME	THIS TEAK			OF NORMAL
1815	Bear near Wallowa	53	April_Sept.	74	72
143	Burnt near Hereford d	28	April-Sept.	43	65
185	Catherine near Union	59	April-Sept.	73	81
1816	Grande Ronde at LaGrande	131	April-Sept.	202	65
1814	Hurricane near Joseph	30	April-Sept.	49	61
172	Imnaha at Imnaha	215	April-Sept.	314	68
1810	Lostine near Lostine	95	April—Sept.	133	71
152	Powder near Baker	51	April-Sept.	66	77
		50	April-July	65	77
1822	Wallowa East Fork near Joseph <sup>d</sup>	8.8	April-Sept.	12.1	73
1		7.0	April-July	9.7	72
1					
1					
1					
ł					
		1			

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not Surveyed.

## BURNT, POWDER, PINE, GRANDE RONDE, IMNAHA WATERSHEDS



H WATEF CONTER (Inches	NT LAST YE.  5 24.6 17.5 4 3 0 4.5 4 5.0 7.0 2.1 0.9	24.4 19.2 21.1  8.0 6.9 11.5	15 15 13 0 15 15 11
10.66 7.9 8.4 12.3 4.0 3.4 6.9 2.9 4.5 3.7 2.9	24.6 24.6 27.5 4 8.4 0 4.5 4 3.0 7.0 2.1 0.9	24.4 19.2 21.1  8.0 6.9 11.5	15 15 13 0
7.9 8.4 12.3 4.0 3.4 6.9 2.9 4.5 3.7 2.9	17.5 8.4 3	19.2 21.1  8.0 6.9 11.5	15 13 0 15 15
8.4 12.3 4.0 3.4 6.9 2.9 4.5 3.7 2.9	8.4 3	21.1  8.0 6.9 11.5	13 0 15 15
12.3 4.0 3.4 6.9 2.9 4.5 3.7 2.9	3 3 4.5 4.5 3.0 7.0 2.1 0.9	8.0 6.9 11.5	0 15 15
4.0 3.4 6.9 2.9 4.5 3.7 2.9	4.5 4.3.0 7.0 2.1 0.9	6.9	15 15
3.4 6.9 2.9 4.5 3.7 2.9	3.0 7.0 2.1 0.9	6.9	15
3.4 6.9 2.9 4.5 3.7 2.9	3.0 7.0 2.1 0.9	6.9	15
6.9 2.9 4.5 3.7 2.9	7.0 2.1 0.9	11.5	
2.9 4.5 3.7 2.9	2.1		11
4.5 3.7 2.9	0.9	7.9	
4.5 3.7 2.9			12
3.7 2.9	5 1 1 1		7
2.9			15
			13
5.4			2
	5.4		14
			8
3.7			0
6.3			14
5.0			15
9.8			15
11.6			15
2.8	0.7	4.0	7
	1		1
		1	12
8.0	0 9.3	19.2	15
	3.	3.9 3.4	3.9 3.4 8.2

## WATER SUPPLY OUTLOOK

## UMATILLA, WALLA WALLA, WILLOW, ROCK, LOWER JOHN DAY WATERSHEDS OREGON

*as of* FEBRUARY 1, 1960

#### U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The outlook for 1960 irrigation water supplies in Umatilla, Morrow and Gilliam Counties continues to be "average" to "poor" with the poorest outlook indicated for Birch, Butter, Willow, Rhea and Rock Creeks.

Irrigated lands served from Cold Springs and McKay Reservoirs have a somewhat brighter outlook but storage in McKay is so far only about one-third of that of last year at this date.

## SNOW-COVER

Water contained in the mountain snow-cover is only 57 percent of normal for this date. Although the present moderate and lower elevation snow-pack is much greater than last year, it is still below normal.

In a normal winter about two-thirds of the total winter's snow-pack is on the ground by February 1st. This year, however, the snow accumulation to date is only 38 percent of a normal winter's total.

## SOIL-MOISTURE

The soil-mantle under the mountain snow-pack is still only partially "primed" by direct rainfall and by some snow-melt water and will absorb some of the spring snow-melt in the first few weeks of spring runoff.

#### RESERVOIRED WATER

Stored water in McKay and Cold Springs Reservoirs averages only 59 percent of last year (at this date) and 73 percent of the 15 year normal, 1943 through 1957. With average winter conditions these reservoirs can be brought up to satisfactory levels.

#### STREAMFLOW

Flow of the Umatilla River\* since last October 1 has averaged considerably below normal except in October and November when flows were above normal.

Flow of the South Fork of the Walla Walla River is forecast at 65,000 acre feet or 86 percent normal for the April-September period. Forecast for the Umatilla at Pendleton for the same period is 160,000 acre feet or 86 percent normal. McKay Creek, however, is forecast to flow only 20,000 acre feet or 65 percent normal for the 6 months irrigation season.

The smaller streams, heading in watersheds of low to moderate elevations, will "fall off" to minimum flows much earlier than normal.

\*Preliminary data from U.S. Geological Survey, Portland, Oregon

Ort prepared by:

W. T. FROST AND 808 L. WHALEY

U.S.DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

## WATER SUPPLY OUTLOOK expressed as "Poor", "Foir" "Average" ar "Excellent"

RESERVOIR	STORAGE	(1,000	Ac. Ft.
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STREAM or AREA	FLOW PERIOD			RESERVOIR
STREAM OF AREA	SPRING SEASON	LATE SEASON	L	RESERVOIR
Birch Creek	Fair	Poor		Cold Springs
Butter Creek	Fair	Poor	1	McKay
Dry Creek	Fair	Poor		, and the second
Dugger Creek	Fair	Poor	1	
Johnson Creek	Fair	Poor		
McKay Creek	Average	Fair		
Mill Creek	Fair	Fair		
Mud Creek	Fair	Poor		
Pine Creek	Fair	Poor		
Rhea Creek	Fair	Poor		
Rock Creek	Fair	Poor	1	
Umatilla River (Cold				
Springs Res.)	Average	Fair		
Umatilla River, Main	Average	Fair		
Umatilla River (McKay Res.)	Average	Fair		
Walla Walla River, Little	Average	Fair		
Walla Walla River, Main	Average	Fair	1	
Walla Walla River, N. Fk.	Average	Fair	1 1	
Walla Walla River, S. Fk.	Average	Fair		
Willow Creek	Fair	Poor		

KEZEKANIK ZINKARE	. (1,000	AC. PL.	/			
RESERVOIR	RESERVOIR USABLE		MEASURED (First of Month)			
KESEKVOIK	CAPACITY	THIS YEAR	LAST YEAR	NORMAL b		
Cold Springs McKay	50.0 74.0	29.7 15.8	33.6 43.6	28.4 33.7		
-						

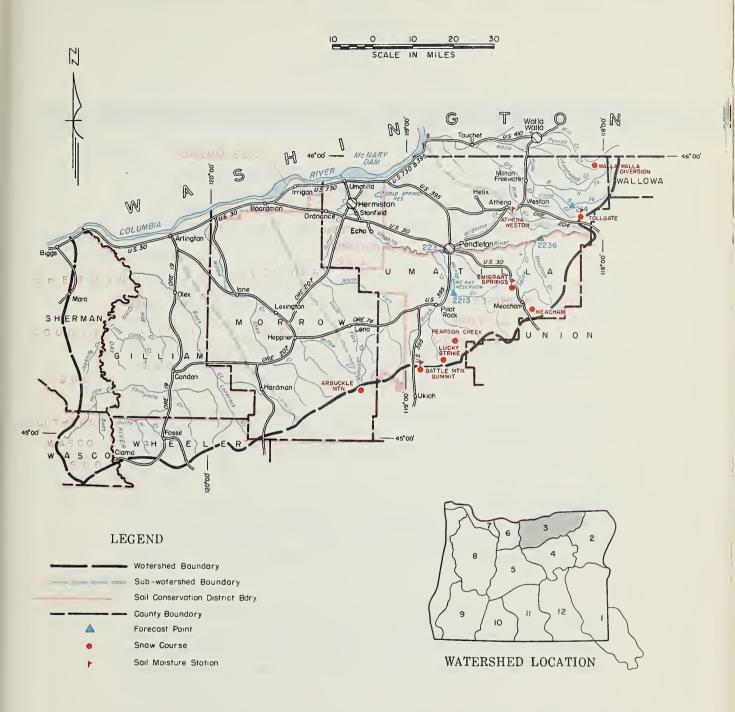
## STREAMFLOW FORECASTS (1,000 Ac. Ft.)

NO.	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL 6	THIS YEAR AS PERCENT OF NORMAL
2213 2236 223 214	McKay near Pilot Rock Umatilla near Gibbon Umatilla at Pendleton Walla Walla, South Fork near Milton	20 19.5 82 160 155 65	April-Sept. April-July April-Sept. April-Sept. April-July April-Sept.	31 31 96 187 182 76	65 63 85 86 85
		53	April-July	62	85

NOW		CURRENT INFORMATION			PAST RECORD		
SNOW COURSE		DATE OF SURVEY	SNOW DEPTH	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS IN
NAME	ELEVATION		(Inches)		LAST YEAR	NORMAL b	NORMAL (
Arbuckle Mountain Battle Mountain Summit Emigrant Springs Lucky Strike Meacham Pearson Creek Tollgate	5400 4340 3925 5050 4300 3000 5050	1/28 1/27 1/28 1/27 1/28 1/27 1/28	21 13 15 26 20 6 30	4.4 3.5 4.6 6.3 5.0 ?	4.6 0.6 0.6  2.7  9.3	8.5 6.1 9.0 7.1  19.2	15 0 15 14 15 0 15

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed.

## UMATILLA, WALLA WALLA, WILLOW, ROCK, LOWER JOHN DAY WATERSHEDS



Umatilla, Walla Walla, Willow, Rock, Lower John Day Watersheds

# WATER SUPPLY OUTLOOK UPPER JOHN DAY WATERSHEDS OREGON

 $as\ of$  FEBRUARY 1, 1960

#### U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE . OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The outlook for 1960 irrigation water supplies in the John Day basin is still only "fair" in spite of a heavy increase in the mountain snow-pack during January. Flow of the John Day River\* during January has been only one-fourth normal, the lowest recorded in the state.

### SNOW-COVER

Water content of the mountain snow-cover is now 57 percent of the 15 year normal (1943-57) and 137 percent of last year's snow-pack at this date.

Snow is about the same as last year on the high elevation courses but is much greater than last year at the lower elevations. Nevertheless the total snow-cover is still much below normal.

In a normal winter there is usually about 69 percent of the total winter's snow-pack on the ground by February 1st. This year, however, the snow accumulation to date is only 42 percent of a normal winter's total.

## SOIL-MOISTURE

The soil-mantle under the mountain snow-pack is still only moderately wet and will absorb some of the early snow-melt to "prime" the water-sheds for stream runoff. This "priming" may use more than the usual amount of water, thus offsetting the present improved snow-pack.

## STREAMFLOW

Forecasts of expected streamflow to come during the irrigation season (April through September) indicate water supplies should be about 75 percent normal. This would mean a flow of 40,000 acre feet for the John Day River as measured at Prairie City during the 6 month irrigation season.

Flows of smaller streams such as Indian Creek, Pine Creek, Beech Creek, Long Creek and others will be considerably below average with late season flows extremely limited.

\*Preliminary data from U.S. Geological Survey, Portland, Oregon

Report prepared by:

W. T. FROST AND BOB L. WHALEY

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209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

## WATER SUPPLY OUTLOOK expressed as "Poor", "Fair" "Average" or "Excellent"

STREAM or AREA	FLOW I	PERIOD
STREAM OF AREA	SPRING SEASON	LATE SEASON
Beech Creek Beech Creek-Fox-Long Crs. Bridge-Mountain Creeks Camas Creek Cherry Creek Indian-Pine Creeks John Day River, Main Fork John Day River, Mid. Fork John Day River, N. Fork John Day River, S. Fork Monument-Kimberly Strawberry Creek	Fair Fair Fair Fair Fair Fair Average Average Fair Fair Fair Fair	Poor Poor Poor Fair Poor Fair Fair Fair Fair Fair Fair Fair

## RESERVOIR STORAGE (1,000 Ac. Ft.)

	WESEKAOIK SIOKAGE	(1,000	AG. Ft.	<b>,</b>	
	RESERVOIR	USABLE	MEASUR	ED (First o	f Month)
	RESERVOIR	CAPACITY	THIS YEAR	LAST YEAR	NORMAL 6
- 1					
		1		I	1

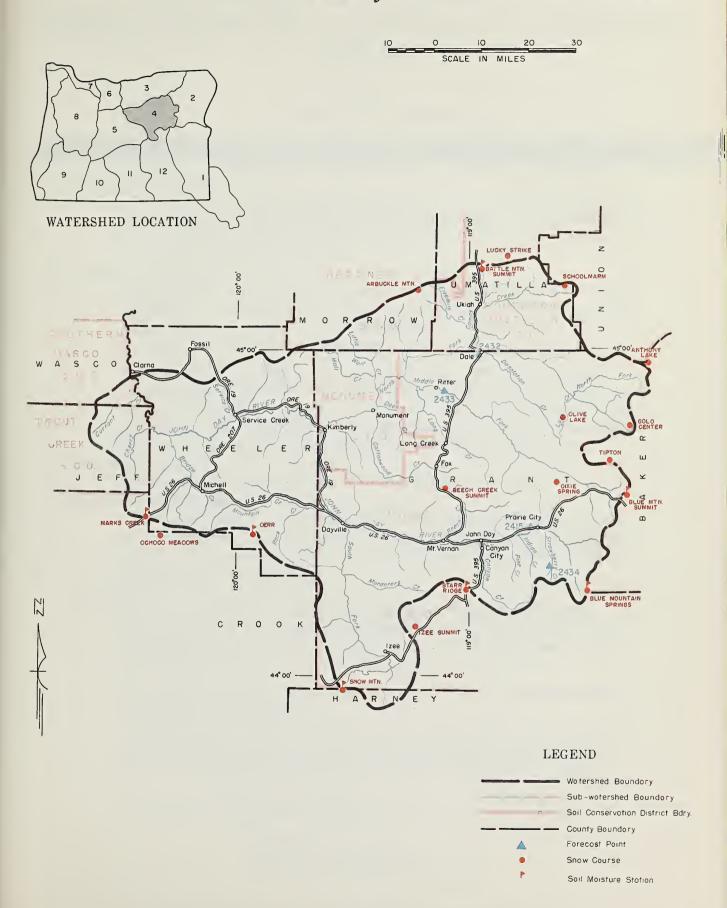
## STREAMFLOW FORECASTS (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL 6	THIS YEAR AS PERCENT OF NORMAL
2415 2433 2434	John Day at Prairie City John Day, Mid. Fork at Ritter Strawberry near Prairie City	40 36 101 6.7	April-Sept. April-July April-Sept. April-Sept.	53 48 135 9.0	76 76 75 74

SNOW		CURRENT INFORMATION				PAST RECORD			
SNOW COURSE		SNOW COURSE	DATE OF SNOW DEPT	SNOW DEPTH	WATER CONTENT	WATER CONTENT (Inches)		YEARS IN	
NAME	ELEVATION	SURVEY	(Inches)	(Inches)	LAST YEAR	NORMAL b	NORMAL &		
Anthony Lake	7125	1/27	35	8.4	8.4	21.1	13		
Arbuckle Mountain	5400	1/28	21	4.4	4.6	8.5	15		
Battle Mountain Summit	4340	1/27	13	3.5	0.6		0		
Beech Creek Summit	4800	1/27	15	3.5	1.1	4.6	14		
Blue Mountain Springs	5900	1/26	28	6.9	5.8	11.0	14		
Blue Mountain Summit	5098	1/28	16	3.4	3.0	6.9	15		
Derr	5670	1/27	23	5.0	2.5	7.4	15		
Dixie Springs	6650	c					9		
Gold Center	5340	1/26	22	5.4	5.4	9.2	14		
Izee Summit	5293	1/27	19	3.9	2.5	6.7	14		
Lucky Strike	5050	1/27	26	6.3		9.0	14		
Marks Creek	4540	1/26	15	2.2	Т	4.2	15		
Ochoco Meadows	5200	1/28	24	5.1	3.7	8.1	15		
Olive Lake	6000	1/29	28	7.1	7.3	13.3	15		
Schoolmarm	4775	1/29	12	2.8	0.7	4.0	7		
Snow Mountain	6300	c							
Starr Ridge	5156	1/26	16	3.6	1.5	4.9	14		
Tipton	5100	1/25	19	3.9	3.4	8.2	12		
Williams Ranch	4500	2/2	8	2.5			0		

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed.

## UPPER JOHN DAY WATERSHEDS



Upper John Day Watersheds

# WATER SUPPLY OUTLOOK UPPER DESCHUTES, CROOKED WATERSHEDS OREGON

as of
FEBRUARY 1, 1960

## U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

#### GENERAL OUTLOOK

The outlook for 1960 irrigation water supplies in the Deschutes-Crooked area is definitely "poor" except for those lands served from reservoired water supplies, and even in these cases this year, the outlook is only "fair" with reduced stored water.

### SNOW-COVER

Water content of the mountain snow-cover is only 39 percent of normal for February 1. Although there is more snow than at this date last year, the watersheds are dryer than normal under the snow and will absorb greater than usual amounts of snow-melt water.

Snowfall during January failed to equal the usual amount for that month and didn't begin to reduce the great shortage evident one month ago. In a normal winter there is usually about two-thirds of the total winter's snow-pack on the ground by February 1st. This year, however, the snow accumulation to date has been only 22 percent of a normal winter's total.

#### SOIL-MOISTURE

The soil-mantle on mountain watersheds is still dryer than normal.

#### RESERVOIRED WATER

Stored water supplies are 89 percent of normal and only 67 percent of last year on February 1st. The lack of "carry-over" supplies will be heavily felt this year. Inflow to all reservoirs will be on the order of 45 to 65 percent normal this season.

#### STREAMFLOW

Flow of the Deschutes River\*has been dropping steadily below normal. The flow forecast for the Deschutes at Benham Falls for the 6 months April through September is 62 percent normal and for Little Deschutes is 53 percent normal.

Squaw and Tumalo Creeks are forecast to flow 75 and 65 percent normal during the irrigation season.

Crooked River, the eastern tributary of the Deschutes River, is forecast to flow 54 percent normal April through September while Ochoco Creek is expected to produce only a 45 percent normal inflow to Ochoco Reservoir.

\*Preliminary data from U.S. Geological Survey, Portland, Oregon

Report prepared by:

W. T. FROST AND BOB L. WHALEY

U.S.OEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

## WATER SUPPLY OUTLOOK expressed as "Poar", "Fair" "Average" or "Excellent"

STREAM or AREA	FLOW	PERIOD
STREAM OF AREA	SPRING SEASON	LATE SEASON
Arnold Irrigation Dist. Bear Creek Beaver Creek Camp Creek Central Ore. Irrig. Dist. Crooked River Deschutes River Hay-Trout Creeks Lone Pine Irrig. Dist. Mill Creek North Unit Irrig. Dist. Ochoco Creek Sisters Irrigation Dist. Snow Creek Irrig. Dist. Squaw Creek Irrig. Dist. Swalley Ditch Tumalo Project Walker Basin Irrig. Dist.	Average Fair Fair Average Fair Average Fair Average Fair Fair Fair Fair Fair Average Fair	Fair Poor Poor Poor Fair

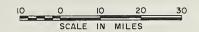
		Ac. Ft.					
RESERVOIR			MEASURED (First of Month)				
	CAPACITY	THIS YEAR	LAST YEAR	NORMAL b			
Crane Prairie Crescent Lake Ochoco Wickiup	55.3 80.0 46.0 200.0	37.2 44.1 3.1 125.6	47.4 64.9 26.3 175.5	41.2 46.1 25.0 122.4			
Note: The U.S. Bu that dead st acre feet ma storage figu	orage in y be inc	the amo	ount of n the cu	5360			

## STREAMFLOW FORECASTS (1,000 Ac. Ft.)

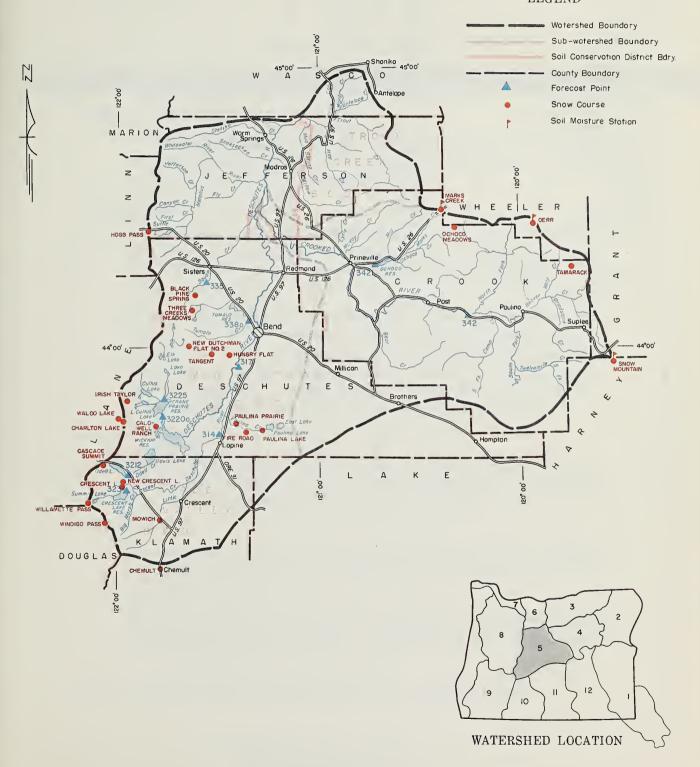
FORECAST POINT		FORECAST	FORECAST PERIOD	NORMAL b	THIS YEAR AS PERCENT
NO.	NAME	THIS YEAR			OF NORMAL
3220a	Crane Prairie Reservoir total inflow	91	Innil Cont	143	C.4
323	Crescent at Crescent Lake d	14	April-Sept. April-Sept.	31	64 45
342	Crooked near Post	70	April-Sept.	129	54
317	Deschutes at Benham Falls d	370	April-Sept.	602	62
317	Descriutes at Bernain Falls	250			
3225	Deschutes below Snow Creek	45	April-July	404	62
314	,	60	April-Sept.	74	61
314	Deschutes, Little near Lapine <sup>d</sup>		April-Sept.	113	53
3421	Ochoco Reservoir net inflow	54 15	April-July	100	54
3212	Odell near Crescent		April-Sept.	33	45
335		24 41	April-Sept.	34	71
338a	Squaw near Sisters Tumalo near Bend <i>d</i>		April-Sept.	55	75
338a	Tumalo near Benda	36	April—Sept.	55	65
			<u> </u>		

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) 1957 excepted.

## UPPER DESCHUTES, CROOKED WATERSHEDS



## LEGEND



## Upper Deschutes, Crooked Watersheds

Black Pine Spring Caldwell Ranch Cascade Summit Charlton Lake Chemult Derr Sire Road Hogg Pass Hungry Flat Irish-Taylor Marks Creek	4600 4400 4880 5750 4760 5670 5050 4755 4400	1/22 1/26 1/27 1/27 1/25 1/26	SNOW DEPTH (Inches)  Course dest 19 37 31 21 23 13	water Content (Inches) royednew 4.2 10.0 6.4 4.8 5.0 3.1	T 6.9 6.4 3.6 2.5	NORMAL b	9 15 6 15
Black Pine Spring Caldwell Ranch Cascade Summit Charlton Lake Chemult Derr Sire Road Hogg Pass Hungry Flat Irish-Taylor Marks Creek	4600 4400 4880 5750 4760 5670 5050 4755 4400	1/22 1/26 1/21 1/27 1/27 1/25	Course dest 19 37 31 21 23	(inches)  royed—new 4.2 10.0 6.4 4.8 5.0	road cons T 6.9 6.4 3.6 2.5	truction 9.1 24.4 20.6 10.0	9 15 6 15
Caldwell Ranch Cascade Summit Charlton Lake Chemult Derr Sire Road Hogg Pass Hungry Flat Irish-Taylor Marks Creek	1400 1480 5750 1760 5670 5050 1755	1/22 1/26 1/21 1/27 1/27 1/25	19 37 31 21 23 13	4.2 10.0 6.4 4.8 5.0	T 6.9 6.4 3.6 2.5	9.1 24.4 20.6 10.0	15 6 15
Caldwell Ranch Cascade Summit Charlton Lake Chemult Derr Sire Road Hogg Pass Hungry Flat Irish-Taylor Marks Creek	1400 1480 5750 1760 5670 5050 1755	1/22 1/26 1/21 1/27 1/27 1/25	19 37 31 21 23 13	4.2 10.0 6.4 4.8 5.0	T 6.9 6.4 3.6 2.5	9.1 24.4 20.6 10.0	15 6 15
Cascade Summit Charlton Lake Chemult Derr Fire Road Hogg Pass Hungry Flat Irish-Taylor Marks Creek	4880 5750 4760 5670 5050 4755	1/26 1/21 1/27 1/27 1/25	37 31 21 23 13	10.0 6.4 4.8 5.0	6.9 6.4 3.6 2.5	24.4 20.6 10.0	15 6 15
Charlton Lake Chemult Derr Fire Road Hogg Pass Hungry Flat Irish-Taylor Marks Creek	5750 4760 5670 5050 4755 4400	1/21 1/27 1/27 1/25	31 21 23 13	6.4 4.8 5.0	6.4 3.6 2.5	20.6 10.0	6 15
Chemult Derr Fire Road Hogg Pass Hungry Flat Irish-Taylor Marks Creek	4760 5670 5050 4755 4400	1/27 1/27 1/25	21 23 13	4.8 5.0	3.6 2.5	10.0	15
Derr Fire Road Hogg Pass Hungry Flat Irish-Taylor Marks Creek	5670 5050 4755 4400	1/27 1/25	23 13	5.0	2.5		
Fire Road Hogg Pass Hungry Flat Irish-Taylor Marks Creek	5050 1755 1400	1/25	13			7.4	
Hogg Pass Hungry Flat Erish-Taylor Marks Creek	1755 1400			3-1			
Hungry Flat 4 Irish-Taylor 5 Marks Creek 4	1400	1/26			T		3
Irish-Taylor Marks Creek			38	9.2	7.5	32.3	15
Marks Creek		1/28	8	2.4	0.0	7.5	6
	5500	1/22	45	11.7	9.0	29.5	6
	4540	1/26	15	3.2	Т	4.2	15
Mowich 4	1700	1/25	16	4.1	0.0		1
New Crescent Lake	4800	1/27	27	6.4	3.1	12.3	5
New Dutchman Flat No. 2*	6400	1/28	46	13.8	9.5	40.4	8
Ochoco Meadows 5	5200	1/28	24	5.1	3.7	8.1	15
Paulina Lake	6330	1/25	26	6.2	4.5		3
	4285	1/25	5	1.1	Т		3
	6300	c					
	4800	C		į			
	5400	1/28	25	6.4	Т	20.6	6
	5600	1/29	13	3.6	3.0	13.7	13
	5500	1/21	31	7.1	6.8	20.9	8
,	5600	1/26	56	15.8	7.7	32.3	7
				13.8			7
Windigo Pass	5800	1/26	48	13.8	6.4	35.6	/
*New snow course replacing New Dutchman Flat; normal is for old course.							

# WATER SUPPLY OUTLOOK HOOD, MILE CREEKS, LOWER DESCHUTES WATERSHEDS OREGON

as of
FEBRUARY 1, 1960

U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION 2nd OREGON STATE ENGINEER

### GENERAL OUTLOOK

The 1960 water supply outlook is "fair" to "poor" for Hood River Valley and Wasco County streams. The snow-pack is less than one-third normal resulting in below normal streamflow forecasts.

### SNOW-COVER

Water content of the snow-pack, although slightly better than at this time last year, is still only 30 percent of the 1943-57 normal. Lower elevations have a significant increase over last year while higher elevations show much less water.

Usually about 60 percent of the total snow-pack is on the ground by February 1st. This year, however, the January 1st accumulation was very low, as was last year, but the snowfall during January was not only below normal but even below that of last year. The normal January accumulations is about 22 percent of the year's total. This year, an increase of only 14 percent was received during last month.

### SOIL-MOISTURE

Watershed soil moisture conditions are unchanged from last month. Precipitation in the form of snow at lower elevations has not "primed" these soils as it might have if it had fallen as rain.

### STREAMFLOW

The flow of the Hood River\* was slightly above normal during January, bringing the October-January average up to 91 percent of normal for the 1943-57 period.

The April-September forecasts for the Hood near Hood River is 270,000 acre feet or 74 percent of normal. The West Fork of Hood at 75 percent and the White at 125,000 at 70 percent.

\*Preliminary data from U.S. Geological Survey, Portland, Oregon

Report prepared by:

W. T. FROST AND BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

### WATER SUPPLY OUTLOOK expressed os "Poor", "Fair" "Average" or "Excellent"

WAILN SUFFLE GUILLOUN "Average" or "Excellent"						
STREAM or AREA	FLOW PERIOD					
JINEAN OF ANEA	SPRING SEASON	LATE SEASON				
Aldridge Ditch	Poor	Poor				
Badger Creek	Poor	Poor				
Dee Irrigation District	Fair	Poor .				
East Fork Irrig. Dist.	Fair	Poor				
Farmers Irrig. Dist.	Fair	Poor				
Glacier Irrig. Dist.	Fair	Poor				
Hood River Irrig. Dist.	Fair	Poor				
Juniper Flat	Fair	Poor				
Middle Fork Irrig. Dist.	Fair	Poor				
Mile Creeks	Poor	Poor				
Mill Creek	Poor	Poor				
Mount Hood Irrig. Dist.	Fair	Poor				
Rock-Gate-Threemile Crs.	Poor	Poor				
Tygh Creek	Poor	Poor				
White River	Fair	Poor				

### RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR STORAGE	(1,000	AU. 1	'			
RESERVOIR	USABLE	MEASURED (First of Month)				
RESERVOIR	CAPACITY	THIS YEAR	LAST YEAR	NORMAL b		

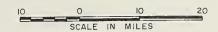
### STREAMFLOW FORECASTS (1,000 Ac. Ft.)

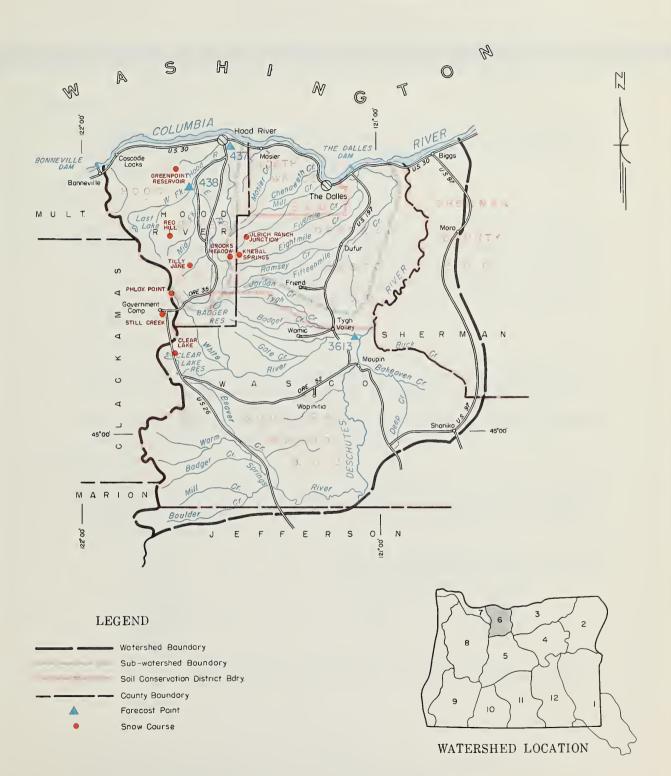
NO.	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL b	THIS YEAR AS PERCENT OF NORMAL
437 438 3613	Hood near Hood River <sup>d</sup> Hood, West Fork near Dee White below Tygh Valley	270 225 130 110 125 110	April-Sept. April-July April-Sept. April-July April-Sept. April-July	365 311 174 151 178 161	74 72 75 73 70 68

SNOW		CURRENT INFORMATION				PAST RECORD		
SNOW COURSE		DATE OF	SNOW DEPTH	WATER CONTENT	WATER CONT	WATER CONTENT (Inches)		
NAME	ELEVATION	SURVEY	(Inches)	(inches)	LAST YEAR	NORMAL b	NORMAL 6	
Brooks Meadows	4300	c						
Clear Lake	3800	1/26	16	3.7	1.8	8.8	6	
Clear Lake Experimental Course		1/26	24	6.0	3.5		0	
Greenpoint Reservoir	3400	1/28	28	8.2	1.3	15.6	10	
Knebal Springs	3850	c	1					
Phlox Point	5600	1/22	53	14.0	18.0	43.5	15	
Red Hill	4400	1/27	34	8.5 g	5.9	34.0	9	
Still Creek	3700	1/26	29	6.9	4.7	18.7	14	
Tilly Jane	6000	1/24	30	8.6	12.5	35.4	9	
Ulrich Ranch Junction	3350	С						

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Water content partly estimated.

### HOOD, MILE CREEKS, LOWER DESCHUTES WATERSHEDS





Hood, Mile Creeks, Lower Deschutes Watersheds

### WATER SUPPLY OUTLOOK LOWER COLUMBIA WATERSHEDS OREGON

as of
FEBRUARY I, 1960

U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

### GENERAL OUTLOOK

The water supply outlook for spring and summer flow of the Columbia River near The Dalles has improved during the last month and is now forecast at 95 percent of the 15 year normal (1943–57).

### SNOW-COVER

Snow courses measured near February 1st in the United States and Canada indicate below normal January snowfall throughout the basin. The northern half of the Columbia Basin has a near normal snow-pack, but the remainder of the basin to the south, in Washington, Oregon, Idaho and western Wyoming, varies from record lows to 72 percent of normal on the Little Wood in southern Idaho.

### SOIL-MOISTURE

Watershed soils in the northern half of the basin are well primed and should not absorb a significant amount of the snow water when the melt begins.

Soils in the southern half of the basin are very dry and will reduce resultant streamflow from an already light snow-pack.

### STREAMFLOW

The flow of the Columbia River near The Dalles\* was a little below normal for January but has been much above normal for the previous three months of the water year.

Month	Percent of Normal Discharge (1943-57)
October	182 Adjusted for storage
November	161 " " "
December	132 " " "
January	91 " " "

<sup>\*</sup>From preliminary data furnished by U.S. Geological Survey, Portland, Oregon

Report prepared by:

W. T. FROST AND BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

and;

M. W. NELSON
U.S.OEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE
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### STREAMFLOW FORECASTS "(1,000 Ac. Ft.)

	FORECAST POINT	FORECAST	FORECAST PERIOD	NORMAL 6	THIS YEAR AS PERCENT	
NO.	NAME	THIS YEAR	THIS YEAR		OF NORMAL	
09 <b>-</b> B	Columbia at The Dalles	101,000 68,700	April-Sept. April-June	106,100 72,000	95 95	

### HISTORICAL DATA (Columbia River at The Dalles)

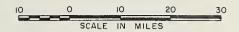
VEAS	S	TREAMFLOW <sup>C</sup> (1,000 A.F.	.)	PEAK <sup>e</sup>	
YEAR	APR SEPT.	APR. — JUNE	MAY - JUNE	(1,000 c.f.s )	DATE
1943	115,000	75,300	52,400	541	June 21
1944	61,900	39,200	32,100	326	June 19
1945	81,500	54,600	47,300	505	June 8
1946	108,000	75,400	59,600	581	May 30
1947	100,300	70,000	56,800	536	May 11
1948	130,500	94,600	81,900	999	May 31
1949	95.700	71,400	56,000	622	May 18
1950	120,600	74,700	61,200	744	June 25
1951	113,000	75,600	59,100	597	May 26
1952	107,700	77,500	57,300	557	May 28
1953	100,600	64,900	55,800	609	June 17
1954	119,500	70,500	59,300	561	May 23
1955	99,500	58,300	50,300	545	June 26
1956	131,200	97.100	75,800	815	June 3
1957	115,200	79,200	67,200	700	May 22
	i ' i	· ·			110 y 22
1943-57 Avg.	106,700	71,900	58,100	616	
1958	97,700	72,000	58,600	593	May 31

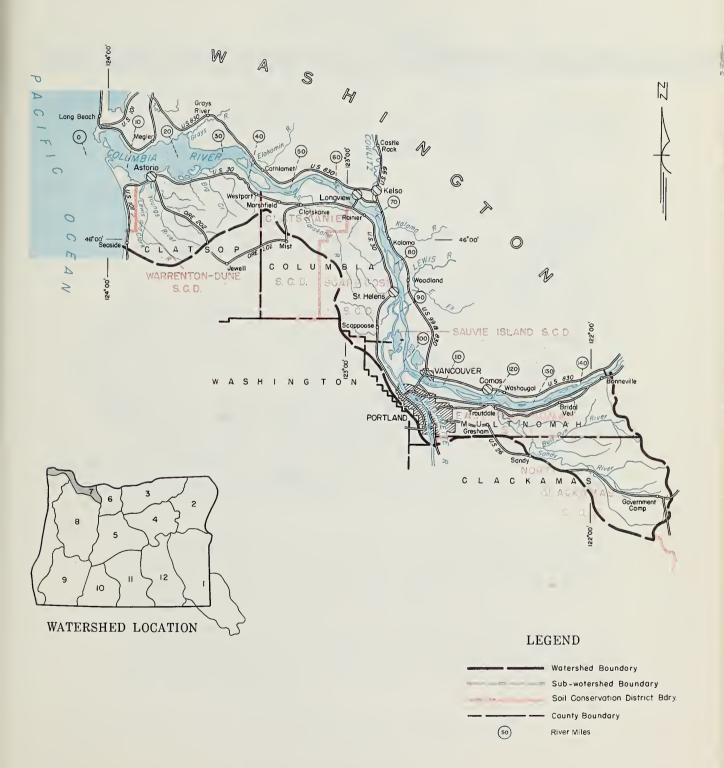
### LOWER COLUMBIA RIVER FLOOD STAGES (with 9.5' tide at Astoria) f

				DRAINA	GE DISTRICT PUM	PHOUSE		
VANCOUVER g	FLOW AT	SANDY	SAUVIE ISL.	SCAPPOOSE	DEER ISL.	RAINIER	BEAVER	WOODSON
GAGE	THE DALLES				RIVER MILES			
(Weother Bu.)	(1,000 c.f.s )	118,9	96.0	91.0	77. 0	62.0	52.0	47. 0
35 (1894)	1210	41.2	34.2	33.3	28.5	21.9	17.5	15.5
34	1160	40.5	33.5	32.5	27.7	21.2	17.0	15.0
33	1100	39.6	32.4	31.4	26.7	20.2	16.1	14.3
32	1050	38.9	31.5	30.5	25.7	19.5	15.4	13.7
31 (1948)	1000	38.0	30.7	29.5	25.1	18.8	14.7	13.0
			0					20.4
30	940	36.6	29.5	28.5	24.3	18.1	14.0	12.4
29	890	35.5	28.5	27.7	23.7	17.5	13.4	11.8
28	840	34.3	27.5	26.7	22.8	17.0	13.0	11.4
27 (1956) 26 (1950)	790 750	33.0 32.1	26.5 25.5	25.6 24.6	21.8	16.2 15.5	12.5 12.2	11.0 10.7
26 (1950)	750	34.1	25.5	24.0	20.9	10.5	12.2	10.7
25	700	30.7	24.2	23.2	19.7	14.6	11.7	10.3
24	660	29.7	23.0	22.2	19.0	14.1	11.4	10.2
23	630	29.0	22.3	21.4	18.4	13.6	11.2	10.0
22	590	28.1	21.4	20.3	17.2	13.0	10.9	9.7
21	560	27.2	20.7	19.5	16.4	12.6	10.6	9.6
20	530	26.2	19.8	18.6	15.5	12.1	10.2	9.4
19	530	25.5	19.0	18.0	15.5	11.8	10.2	9.4
18	480	24.4	18.3	17.2	14.3	11.0	9.8	9.3
17	. 450	23.4	17.4	16.4	13.7	11.0	9.6	8.9
16	430	22.4	16.5	15.5	13.0	10.5	9.3	8.7

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Observed flow corrected for storage in F.D.R., Kootenai, Pend Oreille, Flathead, Hungry Horse, Lake Chelan, Coeur d'Alene and Grand Coulee Equalizer. (d) Not scheduled. (e) Observed peak. (f) Based on Corps of Engineers automatic water stage recorder data. (g) Vancouver Weather Bureau gage zero is 1.82' above M.S.L. All other readings are in feet above M.S.L.

### LOWER COLUMBIA WATERSHEDS







### WATER SUPPLY OUTLOOK WILLAMETTE WATERSHEDS OREGON

as of
FEBRUARY I, 1960

### U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

### GENERAL OUTLOOK

The water supply outlook for the 1960 irrigation season in the Willamette Valley is still only fair. Streamflow forecasts range from 67 to 84 percent of normal. Smaller streams without sufficient storage are likely to have a short water season.

### SNOW-COVER

Snow-cover is still well below normal even though it is better than at this date last year. Snowfall for January was less than usual and the water content now stands at 40 percent of the 1943-57 average.

On a normal year, a little better than six-tenths of the total snow-pack has accumulated by February 1st - this year only slightly better than one-fifth has been accounted for. With this big a deficit, past records show it would be very unlikely if a normal snow-pack is attained by the beginning of the melt season.

### SOIL-MOISTURE

Mountain watershed soils were fairly well primed by rains before the ground was frozen. Some of the valley soils, however, still have a moisture deficiency caused by below normal fall and winter precipitation thus far.

### RESERVOIRED WATER

The five multi-purpose reservoirs have begun to fill during the last month and three of the five are above normal as of February 1.

### STREAMFLOW

The flow of the Middle Fork of the Willamette\* has averaged 38 percent of normal for the October through January period. Forecasts of spring and summer streamflow varies from 67 percent of normal on the Santiam to 84 percent on the Clackamas and Row Rivers.

Smaller streams are expected to decline earlier in the season and those without storage facilities are likely to have short irrigation supplies. The above forecasts assume normal meteorological conditions will prevail during the balance of the year.

\*Preliminary data from U.S. Geological Survey, Portland, Oregon

Report prepared by:

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### WATER SUPPLY OUTLOOK expressed os "Poor", "Foir" "Average" or "Excellent"

STREAM or AREA	FLOW	PERIOD
STREAM OF AREA	SPRING SEASON	LATE SEASON
Calapooya Clackamas McKenzie Molalla Santiam, North Santiam, South Willamette, Coast Fork Willamette, Middle Fork	Fair Average Average Fair Average Average Average Average	Poor Fair Fair Poor Fair Fair Fair

### RESERVOIR STORAGE (1,000 Ac. Ft.)

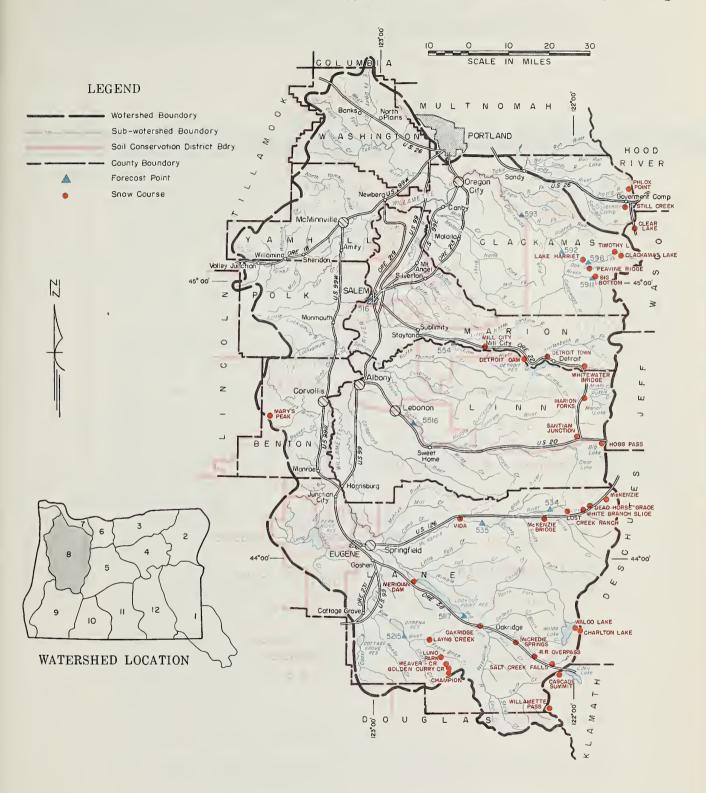
MESERTOIN STORAGE	(1,000	AU. IL.					
RESERVOIR	USABLE	MEASURED (First of Month)					
NESER VOIN	CAPACITY	THIS YEAR	LAST YEAR	NORMAL 6			
Cottage Grove Detroit Dorena Fern Ridge Lookout Point	30.0* 299.9* 70.5* 94.2* 337.2*	2.4 14.5 5.8 8.9 34.3	3.5 84.9 12.0 19.8 73.0	0.5 6.7 2.6 19.3			
*Multiple purpose reservoir—space reserved primarily for flood runoff.							

### STREAMFLOW FORECASTS "(1,000 Ac. Ft.)

NO,	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL b	THIS YEAR AS PERCEN OF NORMA
					01 1101111112
5911	Clackamas at Big Bottom	140	April-Sept.	184	76
		111	April-July	150	74
593	Clackamas at Estacada	735	April-Sept.	879	84
		640	April-July	763	84
592	Clackamas above Three Lynx	550	April—Sept.	674	82
		465	April-July	578	80
534	McKenzie at McKenzie Bridge	470	April—Sept.	640	73
		350	April-July	488	72
535	McKenzie near Vida	970	April—Sept.	1362	71
		780	April-July	1120	70
598	Oak Grove Fork above Power Intake	160	April-Sept.	198	81
		125	April-July	156	80
5215	Row near Dorena	95	April-Sept.	113	84
	d	90	April-July	109	83
554	Santiam, North at Mehama $^d$	650	April-Sept.	968	67
		580	April-July	865	67
516	Santiam, South at Waterloo	475	April-Sept.	652	73
	ITTER AND THE RESERVE TO THE RESERVE	440	April-July	616	71
5117	Willamette, Mid. Fork below North Fork	690	April—Sept.	909	76
E3.0	near Oakridge	610	April-July	804	76
516	Willamette at Salem $d$	3995	April-Sept.	5320 4810	75 75
		3610	April-July	4810	75
		1			1

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed.

### WILLAMETTE WATERSHEDS



SNOW		CURF	CURRENT INFORMATION			PAST RECORD			
SNOW COURSE		DATE OF	SNOW DEPTH	WATER CONTENT	WATER CONTENT (Inches)		YEARS IN		
NAME	ELEVATION	SURVEY	(inches)	(Inches)	LAST YEAR	NORMAL b	NORMAL		
Big Bottom	2118	1/30	10	2.7	Т	5.8	6		
Cascade Summit	4880	1/26	37	10.0	6.9	24.4	15		
Champion	4500	1/26	38	11.5	0.5	20.1	15		
Charlton Lake	5750	1/21	31	6.4	6.4	20.6	6		
Clackamas Lake	3400	C	01	0.1	0.1	20.0	6		
Clear Lake	3500	1/26	16	3.7	1.8	8.8	6		
Clear Lake Experimental Course	0000	1/26	24	6.0	3.5	1 0.0	n		
Dead Horse Grade	3800	1/26	27	7.1	T	18.4	8		
Detroit Town	1600	1/26	8	2.7	0.0	3.6	8		
Detroit Dam	1580	1/26	T	T	0.0	1.4	8		
Golden Curry Creek	3136	1/26	9	2.6	0.0	8.0	8		
Hogg Pass	4755	1/26	38	9.2	7.5	32.3	15		
Lake Harriet	2045	1/30	13	4.3	0.0	3.7	7		
Layng Creek	1200	1/26	0	0.0	0.0	0.4	8		
Lost Creek Ranch	1746	1/26	14	3.8	0.0	5.2	6		
Lund Park	1740	1/26	0	0.0	0.0	2.2	8		
Marion Forks	2730	1/26	21	4.8	1.0	11.7	15		
Marys Peak	3620	f	21	4.0	1.0	11./	15		
McCredie Springs	2120	1/26	т	Т	0.0	1.9			
McKenzie	4800	1/26	42	11.8	6.6	33.5	8		
McKenzie Bridge	1372	1/26	42 T	T T			11		
Meridian Dam	750	1/26	0	0.0	0.0	2.6	9		
			0	0.0	0.0	0.0	7		
Mill City	826	1/26	0		0.0	0.4	8		
Oakridge	1310	1/26	-	0.0	0.0	0.3	8		
Peavine Ridge	3500	1/29	24	7.8	4.0	13.9	15		
Phlox Point	5600	1/22	53 11	14.0	18.0	43.5	15		
Railroad Overpass Salt Creek Falls	2750	1/26	29	3.0	0.0	5.1	8		
	4000	1/26		7.8	0.8	15.0	8		
Santiam Junction	3990	1/26	23	6.2	1.7	19.7	15		
Still Creek	3700	1/26	29	6.9	4.7	18.7	14		
Timothy Lake	3295	1/29	18	5.7	2.6		2		
Vida	800	1/26	0	0.0	0.0	0.5	8		
Waldo Lake	5500	1/21	31	7.1	6.8	20.9	8		
Weaver Creek	2440	1/26	0	0.0	0.0	2.1	7		
White Branch Slide	2800	1/26	14	3.5	0.0	8.4	9		
Whitewater Bridge	2175	1/26	14	4.0	0.0	7.4	8		
Willamette Pass	5600	1/26	56	15.8	7.7	32.3	7		

## WATER SUPPLY OUTLOOK ROGUE, UMPQUA WATERSHEDS OREGON

as of
FEBRUARY I, 1960

### U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

### GENERAL OUTLOOK

The outlook for 1960 irrigation water supplies in the Rogue-Umpqua water-sheds is only "fair" with nearly all sections sure to have shortages in the late season. Stored water supplies are far below normal and expected inflow to the reservoirs will be extremely short.

### SNOW-COVER

Water content of the mountain snow-cover is more than double that of last year at this date but it is still only 54 percent of the February 1 normal.

In a normal winter about two-thirds of the total winter's snow-pack is on the ground by February 1st. This year, however, the snow accumulation to date has been only 36 percent of a normal winter's total.

Contrasted with last year is the presence of a fairly satisfactory, but still below normal, low-elevation snow-cover.

### SOIL-MOISTURE

The soil-mantle under the mountain snow-pack is still extremely dry except for the top few inches. These dry soils will soak up more than the normal amount of early snow-melt.

### RESERVOIRED WATER

Stored water in local reservoirs is about 73 percent normal but less than half of that available at this time last year.

### STREAMFLOW

Flow of streams\* in this area has been extremely low this fall and winter. Flows of the Rogue have averaged only 38 percent normal while the Umpqua has averaged only 25 percent of it's normal.

Forecasts of expected flow of local streams during the coming irrigation season (April through September) vary from 80 percent normal on the Rogue and 77 percent on North Umpqua Rivers to 68 percent normal on Little Butte Creek.

Forecasts of inflow to Fourmile Lake, Fish Lake, and Hyatt Reservoir are 70, 68, and 77 percent normal respectively.

Flow of small streams heading in low elevations will be extremely short this year but probably slightly better than last year.

\*Preliminary data from U.S. Geological Survey, Portland, Oregon

PORT PREPARED BY:

W. T. FROST AND BOB L. WHALEY

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209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

### WATER SUPPLY OUTLOOK expressed os "Poor", "Fair" "Average" or "Excellent"

	FLOW PERIOD			
STREAM or AREA	SPRING SEASON	LATE SEASON		
Althouse Creek Applegate River, Big Applegate River, Little Ashland Creek Butte Creek, Little Butte Creek, Big Cow Creek Deer Creek Elk Creek Emigrant Cr. (above Res.) Evans Creek Gold Hill Irrigation Dist. Grants Pass Irrig. Dist. Grave Creek Illinois River, East Fork Illinois River, West Fork Neil Creek Red Blanket Creek Rogue River Sucker Creek Table Rock Irrig. Dist. Thompson Creek Wagner Creek Williams Creek	Fair Fair Fair Average Fair Fair Fair Fair Fair Average Average Fair Fair Fair Fair Fair Fair Fair Fair	Poor Fair Fair Fair Fair Fair Fair Poor Fair Poor Fair Average Poor Fair Fair Fair Fair Fair Fair Fair Fai		

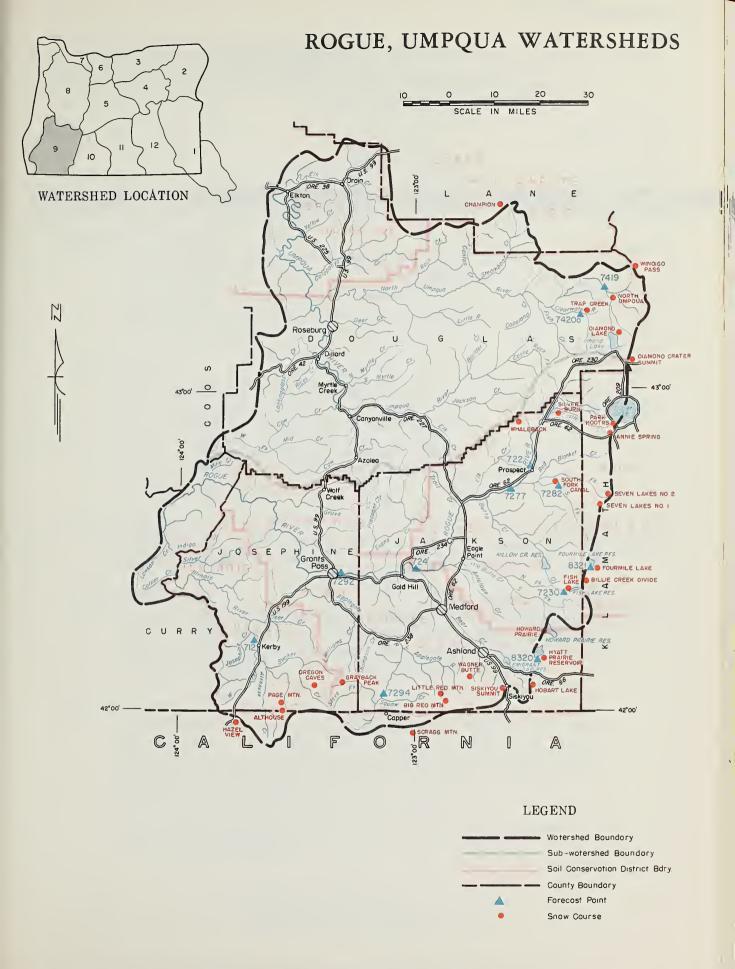
### RESERVOIR STORAGE (1,000 Ac. Ft.

RESERVOIR STORAGE	(1,000	Ac. Ft.	)			
RESERVOIR	USABLE	MEASUR	MEASURED (First of Month)			
KESEKVOIK	CAPACITY	THIS YEAR	LAST YEAR	NORMAL b		
Emigrant Gap Fish Lake Fourmile Lake Howard Prairie Hyatt Prairie	8.3 7.8 16.1 60.0 16.1	0.0 3.8 4.2 5.9 6.1	1.9 7.7 14.6  12.1	5.2 5.0 8.3 		

### STREAMFLOW FORECASTS "(1,000 Ac. Ft.)

	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL b	THIS YEAR AS PERCENT
NO.	NAME	THIS TEAR	L		OF NORMAL
		,	. 12 0 1	202	
7294	Applegate near Copper	h	April-Sept.	131	
7420a	Clearwater above Trap Creek d	54	April-Sept.	73	74
8321	Fourmile Lake net inflow d	5.2	April-Sept.	7.4	70
8320	Hyatt Reservoir net inflow,d	4.8	April-Sept.	6.2	77
712	Illinois River near Kerby $^d$	h	April-Sept.	196	
7230	Little Butte, North Fork below Fish Lake $^d$	11.5	April—Sept.	16.9	68
722	Rogue above Prospect	280	April-Sept.	351	80
	,	235	April-July	293	80
7263a	Rogue, South Fork near Prospect $^d$	65	April-Sept.	83	78
		55	April-July	71	77
7277	Rogue below South Fork	595	April-Sept.	749	79
		485	April-July	608	80
724	Rogue at Raygold near Central Point	800	April-Sept.	1004	80
Í		670	April-July	842	80
7292	Rogue at Grants Pass	780	April-Sept.	974	80
7419	Umpqua, North Fork below Lake Creek <sup>d</sup>	144	April-Sept.	186	77

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not Surveyed. (h) Snow surveys delayed.



### Rogue, Umpqua Watersheds

SNOW		CURF	RENT INFORMA	TION	PAST RECORD			
SNOW COURSE		DATE OF	SNOW DEPTH	WATER CONTENT	WATER CONT	ENT (inches)	YEARS IN	
NAME	ELEVATION	SURVEY	(Inches)	(inches)	LAST YEAR	NORMAL b	NORMAL b	
Althouse	4530	1/27	8	1.7	0.0	5.4	14	
Annie Spring	6018	1/28	59	16.3	14.9	30.1	14	
Beaver Dam Creek	5100	1/27	25	6.8			0	
Big Red Mountain	6500	f			12.6	21.4	12	
Billie Creek Divide	5300	1/28	34	10.3	5.5	17.6	11	
Champion	4500	1/26	38	11.5	0.5	20.1	15	
Cold Springs Camp	6100	1/29	42	12.4			0	
Deadwood Jct.	4600	1/27	24	6.4	l		0	
Diamond-Crater Summit	5800	1/23	40	11.5	7.0		0	
Diamond Lake	5315	1/23	36	10.1	3.0	18.3	15	
Fish Lake	4670	1/27	23	7.8	T	10.6	14	
Fourmile Lake	6000	1/27	37	11.4	4.6	24.4	7	
Grayback Peak	6000	f	,		10.8	18.0	13	
Hazel View	2500	1/27	0	0.0	0.0		2	
Hobart Lake	5010	g			T	5.8	9	
Howard Prairie	4560	1/27	18	5.1	T		0	
Hyatt Prairie Reservoir	4900	1/27	26	7.2	T	7.9	14	
Little Red Mountain	6500	f	1 20	7.2		16.8	11	
North Umpqua	4215	1/27	27	6.8	Т	12.5	8	
Page Mountain	4045	1/27	6	1.3	0.0		3	
Park Headquarters	6450	1/28	66	18.7	21.5	38.5	12	
Rye Spring Spur	5000	1/27	28	8.6	21.0		0	
Seven Lakes #1	6800	1/26	63	19.8		31.1	9	
Seven Lakes #2	6200	1/26	51	14.3		25.3	10	
Silver Burn	3720	1/28	30	8.8	1.9	10.9	15	
Siskiyou Summit	4630	1/30	13	5.2	0.0	7.4	15	
South Fork Canal	3500	1/28	9	3.2	0.5	3.8	15	
Trap Creek	3800	1/28	22	6.0	0.0	11.9	5	
Wagner Butte	6900	g				12.7	14	
Whaleback	5140	1/25	44	11.9	6.6	27.9	13	
Windigo Pass	5800	1/26	48	13.8		35.6	7	
New Umpqua Snow Surveys								
Eden Valley Summit	2390	2/1	0	0.0		/	0	
Quartz Mountain #1	4500	1/29	17	5.9			ő	
Quartz Mountain #2	4000	1/29	T	T		8	Ö	
Quartz Mountain #3	3700	1/28	10	3.8		8	0	
Red Butte #1	4560	1/28	32	10.5		5	o o	
Red Butte #2	4000	1/28	17	6.3		/	Ö	
Douglas County Water Resources Survey begins 6 new snow surveys this year on Umpqua watersheds.								

## WATER SUPPLY OUTLOOK KLAMATH WATERSHEDS OREGON

as of
FEBRUARY 1, 1960

U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

### GENERAL OUTLOOK

The water supply outlook for the spring and summer of 1960 in the Klamath Basin is still only "fair". A significant increase in snow-cover occurred during January but the basin as a whole is still only 56 percent of the 1943-57 normal. Reservoirs are only 70 percent of normal and watershed soils are still very dry.

### SNOW-COVER

Water content of the snow-pack is only 56 percent of normal although there is much more low elevation snow this year. Last year most of the lower elevation snow courses had little if any snow.

Usually by February 1st almost two-thirds of the total snow-pack is on the ground in this area. This year a little less than four-tenths had accumulated by this date.

#### SOIL-MOISTURE

Watershed soils are dryer than usual and will absorb valuable moisture from the snow-melt this spring.

### RESERVOIRED WATER

Reservoir water is at a lower level than at this time last year principally due to a lack of carry-over storage as a result of last year's dry season. Gerber is only 8 percent of normal, Clear Lake is 77 percent of normal, and Upper Klamath Lake is 71 percent of the 1943-57 normal.

### STREAMFLOW

Upper Klamath Lake net inflow for the April-September period is forecast at 67 percent of normal as is the Sprague and Williamson. Clear Lake is expected to receive about half of its normal inflow for April-September and Gerber Reservoir forecast is 48 percent of normal or 12,000 acre feet for this same period.

Small streams having mainly low elevation watersheds can expect a short flow season this year.

Report prepared by:

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209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

### WATER SUPPLY OUTLOOK expressed as "Poor", "Fair" "Average" or "Excellent"

STREAM or AREA	FLOW PERIOD			
STREAM OF AREA	SPRING SEASON	LATE SEASON		
Ft. Klamath Valley Lost River (Clear Lake) Lost River (Gerber) Lost River (Willow Res.) Sprague River Upper Klamath Lake Williamson River	Average Average Fair Fair Average Average Average	Fair Fair Fair Poor Fair Fair		

### RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE	MEASURED (First of Month)						
RESERVOIR	CAPACITY	THIS YEAR	LAST YEAR	NORMAL b				
Clear Lake Gerber Upper Klamath Lake	440.2 94.0 584.0	161.2 2.8 248.6	286.5 47.4 401.9	208.8 34.7 348.5				

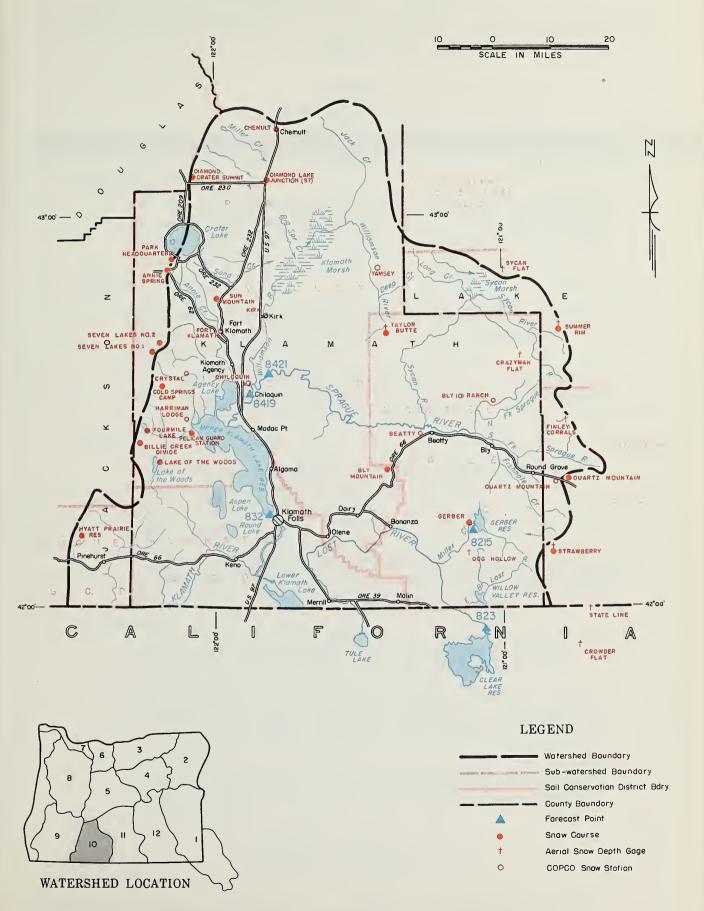
### STREAMFLOW FORECASTS (1,000 Ac. Ft.)

NO.	FORECAST POINT NO. NAME		FORECAST PERIOD	NORMAL 6	THIS YEAR AS PERCENT OF NORMAL
	117mg				OF NORWAL
823	Clear Lake Reservoir inflow g	25	April-Sept.	50	50
		40	March-July	88	45
8215	Gerber Reservoir inflow <sup>g</sup>	12	April-Sept.	25	48
		20	March-July	44	45
8421	Sprague near Chiloquin	200	April-Sept.	296	68
832	Upper Klamath Lake net inflow <sup>g</sup>	425	April-Sept.	632	67
		345	April-July	518	67
8419	Williamson below Sprague River	325	April-Sept.	486	67
		275	April-July	413	67

low —		CURRENT INFORMATION PAST			PAST RECORD		
SNOW COURSE		DATE OF	SNOW DEPTH	WATER	WATER CONT	ENT (Inches)	YEARS IN
NAME	ELEVATION	SURVEY	(Inches)	CONTENT (Inches)	LAST YEAR	NORMAL 6	NORMAL
Annie Spring	6018	1/28	59	16.3	14.9	30.1	14
Beatty (COPCO)	4300	1/31	0	0.0	0.2	0.5	15
Billie Creek Divide	5300	1/28	34	10.3	5.5	17.6	11
Bly Mountain	5090	1/29	13	4.1	0.5		0
Bly 101 Ranch (COPCO)	4800	f			0.5	1.9	15
Chemult	4760	1/27	21	4.8	3.6	10.0	15
Chiloquin (COPCO)	4187	f		1.0	0.6	2.3	15
Cold Springs Camp	6100	1/29	42	12.4			0
Crazyman Flate	6100	1/21	20	4.6	2.5		n
Crowder Flat e	5200	1/21	12	2.8	0.4	3.1	9
Crystal (COPCO)	4200	1/31	14	3.5	1.1	7.8	15
Diamond-Crater Summit	5800	1/23	40	11.5	7.0		0
Diamond Lake Junction (97)	4600	1/23	15	3.5	2.3		0
Dog Hollow e	4900	1/21	5	1.2	0.6		0
Finley Corrals e	6000	1/21	33	7.6	4.4		0
Fort Klamath (COPCO)	4150	1/31	12	4.2	0.8	3.9	15
Fourmile Lake	6000	1/27	37	11.4	4.6	24.4	7
Gerber	4850	1/29	6	2.1	0.1	3.0	8
Harriman Lodge (COPCO)	4200	1/30	8	1.1	T	4.5	15
Hyatt Prairie Reservoir	4900	1/27	26	7.2	Ť	7.9	14
Kirk (COPCO)	4533	f f	20	/ • 4	0.8	6.4	15
Lake of the Woods	4960	1/27	17	3.5	2.8	9.6	15
Park Headquarters	6450	1/28	66	18.7	21.5	38.5	12
Pelican Guard Station	4150	1/20	8	2.6	0.6	30.5	0
Ouartz Mountain	5320	1/29	20	4.9	2.0	5.8	15
Quartz Mountain (COPCO)	5504	1/28	22	5.0	2.2	5.8	13
Seven Lakes No. 1	6800	1/26	63	19.8	2.2	31.1	9
	6200		51	14.3		25.3	10
Seven Lakes No. 2		1/26			8	23.3	10
State Line e	5750	1/21	21	4.8	2.5	6.5	8
Strawberry	5600	1/26	18	4.2	2.0	6.5	8
Summer Rim e	7200	1/21	24	5.5	4.4		15
Sun Mountain	5350	1/27	36	9.3	5.2	20.2	
Sycan Flat e	5500	1/21	24	5.5	0.2		0
Taylor Butte	5100	1/25	11	2.4	0.0	4.6	12
Yamsey (COPCO)	4600	f			0.3	4.2	14

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) From COPCO or USBR records of inflow. (h) Flashboards increase capacity to 513.0

### KLAMATH WATERSHEDS



Klamath Watersheds

### WATER SUPPLY OUTLOOK LAKE COUNTY, GOOSE LAKE WATERSHEDS OREGON

as of
FEBRUARY 1, 1960

### U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

### GENERAL OUTLOOK

The 1960 water supply outlook for Lake County is "fair" after a good increase in snow-cover during January. Stored water supplies are less than one-fourth normal and watershed soils are very dry on most watersheds.

### SNOW-COVER

Snow-cover has improved greatly during the last month as a result of unusually heavy storms. The water content of the snow-pack is now 73 percent of normal for February 1.

Usually by the 1st of February about three-fourths of the total snow-pack is down. This year, although this accumulation improved greatly over January 1, it is still only half accounted for.

### SOIL-MOISTURE

The soil profile is exceedingly dry on most of the watersheds and will absorb several inches of snow water next spring before stream runoff starts.

### RESERVOIRED WATER

Cottonwood and Drews Reservoirs have only 22 percent of normal storage and have approximately one-fifth the storage they held at this time last year.

### STREAMFLOW

Streamflow forecasts, although more encouraging than at this time last year, are still only 55 to 77 percent of normal.

The Drews Reservoir inflow is forecast at 26,000 acre feet for March-July period for 55 percent of normal. Deep Creek is forecast as 77 percent of normal; Honey Creek at 74 percent; and Twentymile Creek at 65 percent.

The high increase in snow-cover during the last month has helped the streamflow outlook but much more snow is needed for a good late irrigation season.

OORT PREPARED BY:

W. T. FROST AND BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE
209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

### WATER SUPPLY OUTLOOK expressed as "Poor", "Foir" "Average" or "Excellent"

STREAM or AREA	FLOW I	PERIOD
STREAM OF AREA	SPRING SEASON	LATE SEASON
Chewaucan River Crooked Creek Deep Creek Dry Creek East Side Goose Lake Guano Lake Honey Creek Lakeview Water Users Assn. Rock Creek Silver-Buck Creeks Summer Lake Thomas Creek Warner Lakes	Fair Fair Fair Fair Fair Fair Fair Fair	Fair Poor Fair Poor Poor Fair Fair Poor Poor Poor Foor Poor Poor Poor

### RESERVOIR STORAGE (1,000 Ac. Ft.)

MEDERYOR STORAGE (1,000 AC. 1C.)									
RESERVOIR	USABLE	MEASURED (First of Month							
RESERVOIR	CAPACITY	THIS YEAR	LAST YEAR	NORMAL b					
Cottonwood Drew	4.1 62.5	0.2 8.3	0.3 40.6	0.3					

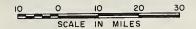
### STREAMFLOW FORECASTS (1,000 Ac. Ft.)

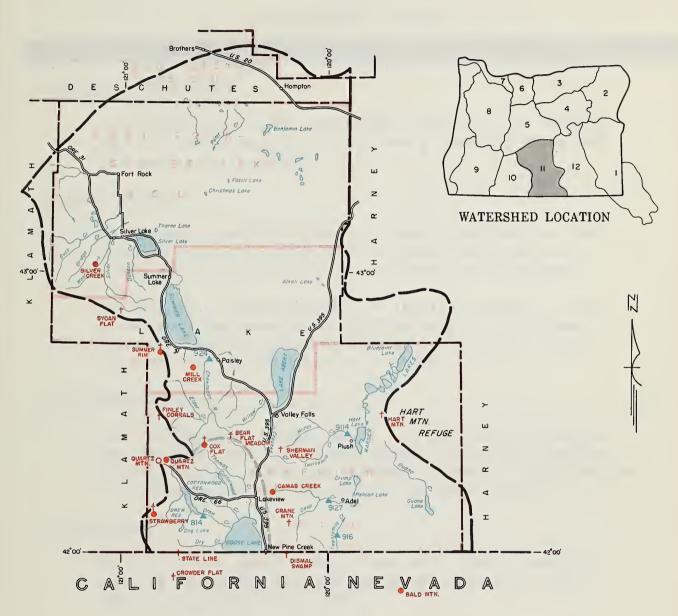
	FORECAST POINT	FORECAST	FORECAST PERIOD	NORMAL b	THIS YEAR AS PERCENT	
NO.	NAME	THIS YEAR			OF NORMAL	
924	Chewaucan near Paisley	С	April-June	82		
9127	Deep above Adel	55	April-June	71	77	
814	Drew Reservoir net inflow	С	April-July	34		
		26	March-July	47	55	
9114	Honey near Plush	12	April-June	16.3	74	
916	Twentymile near Adel	13	April-June	20	65	
		4	·			

10W		CURRENT INFORMATION			PAST RECORD		
SNOW COURSE	DATE OF	SNOW DEPTH	WATER CONTENT	WATER CONTENT (Inches)		YEARS IN	
NAME	ELEVATION	SURVEY	(Inches)	(Inches)	LAST YEAR	NORMAL 6	NORMAL
Bald Mountain	6720	С					
Bear Flat Meadow e	5900	1/21	23	5.3	2.5		0
Camas Creek	5720	1/25	23	5.0	1.3	8.5	15
Cox Flat e	5750	1/21	21	4.8	1.9		0
Crane Mountain e	6020	1/21	23	5.3	1.9		0
Crowder Flate	5200	1/21	12	2.8	0.4	3.1	9
Dismal Swamp (Calif.) e	7000	1/21	24	5.5	5.7		0
Finley Corrals e	6000	1/21	33	7.6	4.4		0
Hart Mountain e	6350	1/29	10	2.3	0.4		0
Mill Creek	6200	c					
Quartz Mountain (COPCO)	5504	1/28	22	5.0	2.0	5.8	15
Quartz Mountain	5320	1/28	20	4.9	2.2	5.8	13
Sherman Valley e	6600	1/21	33	7.6	2.5		0
Silver Creek	4900	1/23	11	2.3	0.8	3.3	14
State Line e	5750	1/21	21	4.8	2.5		0
Strawberry	5600	1/26	18	4.2	2.0	6.5	8
Summer Rime	7200	1/21	24	5.5	4.4		0
Sycan Flate	5500	1/21	24	5.5	0.2		0

<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) 1943 and 1945 excepted. (h) Dec. 1, 1959.

### LAKE COUNTY, GOOSE LAKE WATERSHEDS





### LEGEND



Lake County, Goose Lake Watersheds

### WATER SUPPLY OUTLOOK HARNEY BASIN WATERSHEDS OREGON

as of
FEBRUARY I, 1960

U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

### GENERAL OUTLOOK

The 1960 water supply outlook is only fair for Harney Basin even though unusually heavy snowfall occurred during the last month.

### SNOW-COVER

Snow-cover over the basin is now 71 percent of the 1943-57 normal for this time of year and is almost twice what was on the ground at this time last year.

Usually about three-fourths of the total winter's snow-pack is on the watershed by February I. This year, however, only 42 percent of a normal winter's snow-pack has been accounted for to date.

### SOIL-MOISTURE

Soil-moisture in Harney Basin is dryer than normal but has improved during the last month where soil surface was not frozen, allowing the above normal precipitation to penetrate the surface instead of running off.

### STREAMFLOW

Storms during January have improved the streamflow outlook for spring and summer months but flows will still be much below normal.

The Silvies River is forecast at about 40 percent of normal for the April-September period. The Blitzen, Trout Creek and Silver Creek are expected to have fair early season flow, dropping off sooner than usual during the summer months.

port prepared by:

W. T. FROST AND BOB L. WHALEY

U.S.OEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE
209 S.W. FIFTH AVENUE, PORTLAND 4, OREGON

### WATER SUPPLY OUTLOOK expressed as "Paor", "Fair" "Average" ar "Excellent"

STREAM or AREA	FLOW PERIOD			
STREAM OF AREA	SPRING SEASON	LATE SEASON		
Catlow Valley Cow Creek Donner und Blitzen River Mill-Coffeepot Creeks Rattlesnake Creek Silver Creek Silvies River Soldier-Prather Creek Trout Creek Whitehorse Creek	Fair Fair Fair Fair Fair Fair Fair Fair	Fair Fair Fair Fair Fair Poor Poor Fair Poor Poor		

### RESERVOIR STORAGE (1.000 Ac. Ft.)

RESERVOIR STURAGE (1,000 AC. Pt. )						
RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)				
NESEK VOIK		THIS YEAR	LAST YEAR	NORMAL b		

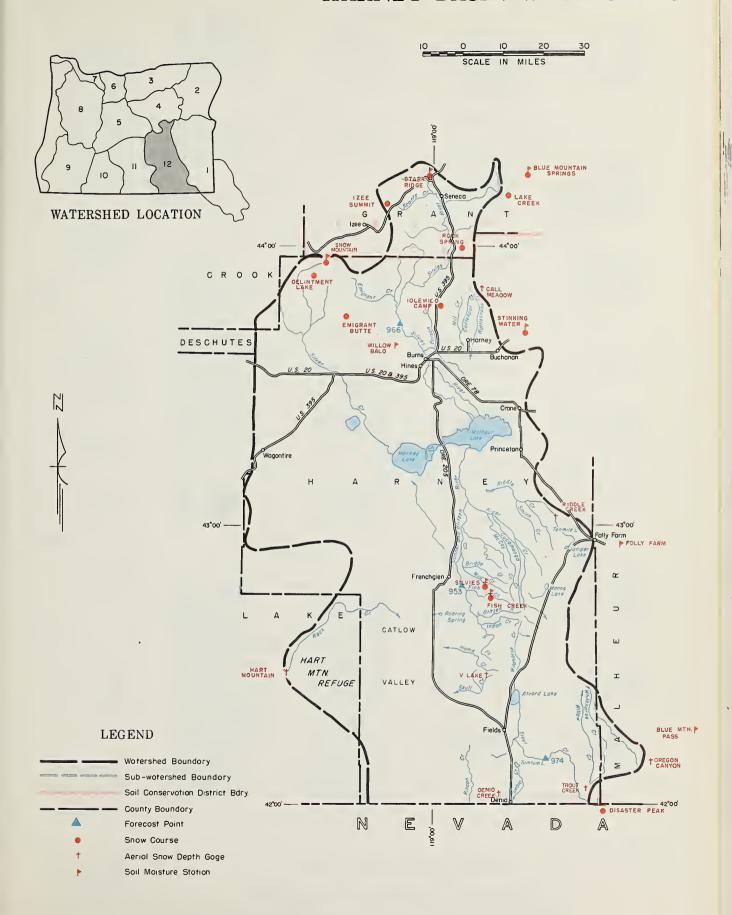
### STREAMFLOW FORECASTS (1,000 Ac. Ft.)

FORECAST POINT		FORECAST	FORECAST PERIOD	NORMAL b	THIS YEAR	
NO.	NAME	THIS YEAR			OF NORMAL	
953 966 974	Donner und Blitzen near Frenchglen Silvies near Burns Trout near Denio	c 43 c	April-Sept. April-Sept. April-Sept.	67 107 9.2	40	

NOW		CURRENT INFORM		TION	PAST RECORD	T RECORD		
SNOW COURSE		DATE OF	SNOW DEPTH	WATER CONTENT	WATER CONTENT (inches)		YEARS IN	
NAME	ELEVATION	SURVEY	(inches)	(Inches)	LAST YEAR	NORMAL b	NORMAL 6	
Blue Mountain Springs	5900	1/26	28	6.9	5.8	11.0	14	
Call Meadow e	5340	2/3	22	5.1			0	
Delintment Lake	5600	c	1		1			
Denio Creek e	6000	1/29	6	1.4	0.9		0	
Disaster Peak '	6500	С						
Emigrant Butte	5000	c						
Fish Creeke	7900	1/29	36	8.3	7.3		0	
Hart Mountain e	6350	1/29	10	2.3	0.4		0	
Idlewild Camp	5200	1/27	16	3.3	0.0	4.5	15	
Izee Summit	5293	1/27	19	3.9	2.5	6.7	14	
Lake Creek	5120	1/27	23	6.7	3.7		2	
Oregon Canyon <sup>e</sup>	7240	2/3	19	4.4	1.3		0	
Riddle Creek e	5300	1/29	12	2 . 8	1.3		0	
Rock Spring	5100	1/27	18	3.7	1.0	4.7	15	
Silvies e	6900 <sup>.</sup>	1/29	26	6.0	2.0		.0	
Snow Mountain	6300	С						
Starr Ridge	5156	1/26	16	3.6	1.5	4.9	14	
Stinking Water	4800	1/27	15	3.7	Т	3.5	14	
Trout Creek e	7800	1/29	12	2.8	2.0		0	
"V" Lake <sup>e</sup>	6600	1/29	10	2.3	2.0		0	

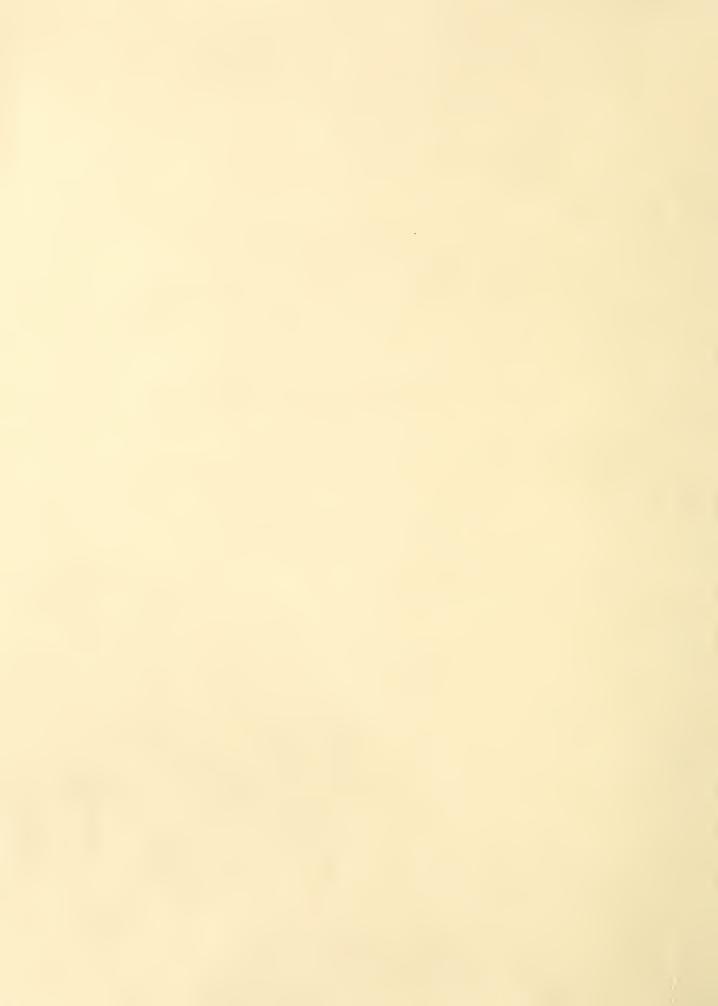
<sup>(</sup>a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed.

### HARNEY BASIN WATERSHEDS



Harney Basin Watersheds

AND MATERIAL WATER AND	Owyhee River Continued	DOWNER PINE GRANDE		SEC. top off.	AEC. 107, 401,	SIC, TOP, RGI,
OWYHEE, MALHEUR WATERSHEDS (1)	15H3 76 Creek (Nev) 6 44N 58E 7100	BURNT, POWDER, PINE, GRANDE RONDE, IMNAHA WATERSHEDS 12)	Gronde Ronde River	UPPER DESCHUTES, CROOKED WATERSHEDS (5)	Middle Fork Willamotte River	The California O
Owyhee River	16F3 Silver City (Ida) 6 5S 3W 61.00		17D1 Ameroid Lake No. 1 16 LS L5E 7480 17D2 Ameroid Lake No. 2 16 LS L5E 7000			The Colifornia Oregon Power Compony's Snow Stations
1636 Antelope Ridge (Ida) 32 85 1W 5900 26 275 38E 4200 18F5 Barren Valley (Ida) 10 115 1E 5700	1801 Silvies 35 328 328 6900 1601 South Mountain No. 2 (Ida) 35 7S 5W 6340	Burnt River	18E1 Anthony Lake 18 7S 37E 7125	Upper Deschutes River	21F7 Charlton Lake 23 21S 6E 5750	1 Featty (COPCO) 22 36S 12E 4300
18FS Barren Valley (Ida) 10 11S 1E 5700 (150 **Sattle Creek (Nev) 31 L6N 56E 7800 (Nev) 30 L5N 56E 6700	15H9 Taylor Canyon (Nev) 35 30M 538 6000	Elli Barney Creek 16 145 36E 5950 6 123 36E 5098	17010 *Bald Mountain 14 & 15 hs Life 6700 1809 Beaver Reservoir 8 58 37E 5340	21E11         Black Pine Spring         14         16S         9E         4600           21F8         Caldwell Ranch         30         21S         9E         4400	22F6 McCredie Springs 36 21S 4E 2120 22F8 Meridian Dan 13 19S 1% 750	10 My 101 Ranch (COPCO) 22 35S 14E 4800
16G9 *Fattle Creek (Nev) 31 L6N 58E 7800 (Nev) 30 L5N 56E 6700 (Nev) 25 L5N 39E 6700	1604 *Triangle (Ida) 25 7S 3W 5150 1	El Dooley Mountain	18D8 County Line 33 6S 36E 5970	22F3 Cascade Surmit 7 23S 6E 4880	22F8 Meridian Dan 13 198 1% 750 22F7 Cabridge 16 218 35 110 22F5 Railroad Overpass 27 22S 5E 2750	4 Crystal (COPCO) 26 3hs 6E 4200
1(H2 BUCKSESS) 17 (New) 17 15N 39E 7200	1005 Front Creek 10 hls 38E 7800 11	E20 Eldorado Pass 20 145 36E 4600 E8 Gold Center 21 98 36E 5340 F9 Thton 34 108 354E 5100	18D6 Lucky Strike 28 3S 32E 5050	21F7 Charlton Lake 23 21S 6E 5750 21F11 Chemult 21 27S 8E 1760	22F4 Salt Creek Falls 33 22S 6E 4000	5 Fort Klamath (COPCO) 22 33S 71E 4150 8 Harriman Ledge (COPCO) 3 36S 6E 4200
16010 *Bill Basin (Nev) 8 47N 34E 6500	10	E9 Tipton 34 10S 351E 5100	17D6 Moss Spring	21F9 Crescent Lake 11 24s 66 1760 21F14 Fire Road 36 21S 11S 5050	22F2 Waldo Lake 15 21S 6E 5500 22F14 Williamotte Pass 33 24S 54E 5600	6 Nirk (COPCO) 1 335 75 4533 9 Quartz Hountain (COPCO) 33 378 168 5504
18H1 Disastor Teak 4 33S 33E 7900	Molheur River	Powder River	18010 Summit Springs 28 4S 3LE 4775	21E6 Hogg Pass 2h 135 74E 4755		12 Yamaey (COPCO) 20 318 11E 4600
15H2 Fry Canyon (Nev) 31 43N 54E 6700	18EL4 Barney Creek 16 14s 36E 5950	a0 00 am mar	17D7 Taylor Green 3 6S L2E 57L0 18D3 Tollgate 32 LN 38E 5070	21F6 Irish-Taylor 25 20S 6E 5500	Coast Fork Willamette River	
15H5 Gold Crentte Peak (Nev) 22 Will 39E 7800	1(E) Bonita 5 16S 40E 4600 1/	El Anthony Lake 18 7S 37E 7125 E5 Bourne 33 8S 37E 5800	25 th 30F 2010	21F17 Mowich 29 25S 25S 1700 21F10 New Crescent Lake 11 2LS 6E 1800	22F9 Champton 12 23S 15 4500	LAKE COUNTY, GOOSE LAKE WATERSHEDS III)
ACE Whole Pasture (Ida) 31	10E21 *BULLY Creek 10 17S 37E 5300 11	E1 Anthony Lake	Imnoha River	21F19 New Dutchman Flat #2 21 18S 9E 6400 21F13 Paulina Lake 34 21S 12E 6330	22F10 Oolden Curry Crook 1 23S 1E 3136 22F13 Layng Crook R, S, 31 21S 1E 1200	
16H2 Jack Creek, Upper (Nev) 9 42N 53E 7250	17E2 Clover Creek 30 16S 39E 4100 18	E8 Gold Center 21 9S 36E 5340	17D1 Ameroid Lake No. 1 16 48 458 7480	21F15 Paulina Prairie 28 21S 11E 4285 21F3 Tangent 28 18S 10E 5400	22F12 Lund Park 22 22S 18 17h0 22F11 Weaver Creek 35 22S 18 24h0	Goose Lake
10HJ Jack Tolling	18E19 Crane Prairle 24 16S 34E 5375	E23 Little Alps 10 7S 37E 6200	17D2 Anerold Lake No. 2 16 48 45E 7000	21El3 Three Creek Meadows 3 17S 9E 5600	)) EE, 16 EUGO	20115 *Pear Flat Meadow 27 36S 19E 5900 2008 Camas Crack 5 39S 2LE 5720
1783 Martin Creek (Nev) 18 30N 16E 7200	10 105 13 15 5120 1:	D10 Summit Springs 9 68 37E 6000 D7 Taylor Green 3 68 42E 5740		22F2 Waldo Lake 15 21S 68 5500 22F1L Willamette Pass 33 2LS 51E 5600	Mory's River	20011 *Cox Flat 16 37S 18E 5750
1607 Mid Flat (10a) 34 95 21 3500	18F6 Rlddle Creek 21 29S 35E 5800 18F1 Rock Spring 23 18S 32E 5100		UMATILLA, WALLA WALLA, WILLOW, ROCK, LOWER JOHN DAY WATERSHEDS (3)	22F15 Windigo Pass 20 25S 6E 5800	23El Mary's Poak 21 12S 7W 3620	20H? *Crowler Flat (Cal) 30 47N 11E 5200
1705 *Oregon Canyon 9 40S 40E 7240	17F1 Shumway Ranch 29 23S 39E 4400	Pine Creek	CONTER SOUND DAT WATERSHEDS (3)	Crooked River	5)FT 1717, 8 100 X	2006 Quarts Mountain 2 38S 16E 5320
1786 *Quinn Ridge (Nev) 9 47N 41E 6300 1586 Rodeo Flat (Nev) 36 43N 53E 6800		D8 Schneider Meadows 35 6S 45E 5400	Umotillo River		ROGUE, UMPQUA WATERSHEDS [9]	2011 *State Line (Cal) 21 4811 11E 5750 2009 Strawberry la hos 16E 5600
1/10			19D2 Arbuckle Mountain 33 4S 29E 5400	19E3 Oerr 14 13S 23E 5670 20E1 Marks Creek 25 12S 19E 4540		Abert Loke
	and and the same	117°	18D12 Battle Mountain Summit 29 3S 31E 4340 1804 Emigrant Springs 29 1N 35E 3925	20E2 Ochoco Meadows 21 13S 20E 5200 19F1 Snow Mountain 1 19S 26E 6300	Rogue River	
C 124 W	A"S H"I N "G T	1 0 N I	1806 Lucky Strike 28 3S 3ZE 5050 18015 Pearson Creek 31 2S 33E 3000	19E4 Tamarack 8 15S 25E 4800	2304 Althouse 17 his 7W h530 2206 Annie Spring 19 31S 6E 6018	20011 *Cox Flat 16 378 18E 5750
TO THE ROAD			18D5 Meacham 24 & 25 1s 35E 4300 18D3 Tollgate 32 4N 38E 5070		22021 Rig Red Mountain 31 408 1W 6500	Audit Tinley Corrala 11 368 16E 6000
16 LAFSOP		₹ IADI3®	18013 Walla Walla Diversion 22 6N 38E 2400	HOOD, MILE CREEKS,	22F19 Olamond-Crater Summit 3h 28S 6E 5800	200h   Mill Crock   1 348 178 6200   2006   Quarte Hountain   2 388 168 5320   20110   Sherman Valley   15 379 218 6600
		River		LOWER DESCHUTES WATERSHEDS (6)	22014 Fish Lake 3 378 45 4865 22012 Fournile Lake 9 368 5E 6000	
R COLUMBIA)	COLUMBIA RIVER 3	1903	Wollo Wolla River	Hood River	2303 Grayback Peak 9 10S 5N 6000 23HD Hazel View (Cal) 9 18N 1E 2500	Summer Lake 2002 Summer Rim 15 338 162 7200
A const	TLANO COLUMBIA RIVER	Porillo River	18D3 Tollgate 32 UN 38E 5070		22017 Hobart Lake 17 403 3E 5010 22026 Howard Prairie 32 38S 4E 4500	2002 Summer Rim 15 339 16E 7200
	21D10 ( 21D21 ( ) ) Page	18040		21D6         Brooks Meadows         2         25         10E         1300           21D1         Greenpoint Resorvoir         28         2N         9E         3100	22016 Hyatt Prairie Reservoir 15 398 3E h900	Sllvor Laka
D WASHINGTON M	ULTHOMAN PIVER PROPERTY	MATICIA 1805	Willow Creek	21D20 Knebal Springs 31 1S 11E 3850 21D8 Phlox Point 6 3S 9E 5600	22022 Little Red Mountain 25 40S 7W 6500 2306 Oregon Caves 16 40S 6W 4000	21F12 Silver Crack 25 % 26 293 13E 4900 20013 *Sycan Flat 25 318 1hE 5500
W DTILL AMOOK	Cia Cono R 2106 S Citieen mile	(8DI5)	. 19D2 Arbuckle Mountain 33 4S 29E 5400	21D4 Red Hill 21 1S 98 4400 21D9 Still Creek 25 3S 845 3700	2305 Page Mountain 8 415 7W 4045 2205 Park Hendquarters 8 313 6E 6450	20013 *Sycan Flat 25 318 1hE 5500
YAMHILL	SHERMAN GILLIAM	1706		21D7 Tilly Jane 15 2S 98 6000	22HI Scragg Mountain (Cal) 9 47N 10H 6200 22010 Seven Lakes No. 1 3 34s 5E 6800	Warner Lake
0 76 3 1	2/01/2	1807 1807 18010	LIGHT TOTAL DAY WATERSHIPS	21D21 Ulrich Ranch Junction 28 1S 11E 3350	22011 Soven Lakes No. 2 26 33% 5E 6200 2202 Silver Burn 30 303 4E 3720	2008 Caman Grook 5 398 218 5720 20016 Grang Hountein 13 408 218 6020
45	A 2IDIA ZIDIO W A 3 C D	18 23	UPPER JOHN DAY WATERSHEDS (4)	Mile Creeks - Mosier Creek	22020 Slekiyou Surmit 17 40S 2E 1630	20016 «Crane Mountain 13 40S 21E 6020 2013 «Diemal Swamp (Cal) 31 48N 16E 7000
0 17	21045	18EA 18E3 Somon	Upper John Doy River		2209 South Fork Canal 12 338 3E 3500 22018 Wagner Butte 1 408 1W 6900	1901 *Mart Nountain 1 363 25E 6350 20010 *Shorman Valley 15 378 21E 6600
A POLK SAN MA BEE	130 N	18E7 18E8 18E5	18E1 Anthony Lake 18 7S 37E 7125 1902 Arbuckle Mountain 33 4S 29E 5400	21D20 Knebal Springs 31 1S 11E 3850	2201 Waleback 3 315 2E 5140	coord addisord torred 12 Mg STM 0000
N Son	Monage Queet	B A K E (R	18D12 Battle Mountain Surmit 29 3S 31E 4340	21D21 Ulrich Ranch Junction 28 1S 11E 3350	Umpqua River	Guana Lake
BENTONA (S)	JEFFERSON WHEELER 198	18EII • 18EI3 • Burni	19E2 Beech Creek Summit 4 12S 30E 4800 18E16 Blue Mountain Spring 21 15S 35E 5900	Lower Deschutes River	22F9 Champlon 12 23S 1F 1500	1981 Raid Mountain (Nev) 17 NSN 21E 6720 1901 *Hart Mountain 1 363 25E 6350
LINCOLN CARRET	2155	RIVET IRETA	18E13 Hlue Mountain Summit 6 12S 36E 5098 19E3 Derr 14 13S 23E 5670		22F18 Olamond Lake 29 27S 6E 5315 22F16 North Umpqua 19 26S 6E 4215	1701 1701111111111111111111111111111111
William Signature	River 20E2	All Millon H	18E11 Oixle Springs 28 11S 34E 6650 18E8 Gold Center 21 9S 36E 5340	21D12 Clear Lake     29     4S     9E     3500       21E6 Hogg Pass     24     13S     7½E     1,755	22F17 Trap Crook 1 27S 4E 3000 2201 Whaloback 3 31S 2E 51h0	
		19E7 18E12 18E16 17E3	19E9 Tree Summit 28 16S 29E 5293		22F15 Windigo Pags 20 253 6E 5800	HARNEY BASIN WATERSHEDS (12)
Are ventile	6 2255 2214 21E9 21E13 6 CROOK	IBEZ	20E3 Marks Creek 25 12S 19E 4540	LOWER COLUMBIA WATERSHEDS (7)		Silvles River - Silver Crook
	21F19 21F4/ F	●17F2	20E2 Ochoco Meadows 21 13S 20E 5200 18E7 Ollve Lake 114 9S 33½E 6000		KLAMATH WATERSHEDS (10)	10F7 *Call Beatons 29 20S 33E 5340
1 258 m	DES CHUTES (19F2	PIVE PIVE	1887 Olive Lake 14 98 334E 6000 1807 Schoolmarm 28 LS 34E 1775 19Fl Snow Mountain 1 198 268 6300	Sondy River	Klamath River	1982 Delintment Lake 28 193 26E 5600 1983 Emigrant Batto 14 218 27E 5000
33	22F7 22F2 0150 RIF15 19F3	Moineus que	19E7 Starr Ridge 20 15S 31E 5150	21D8 Phlox Point 6 3S 9E 5600 21D9 Still Creek 25 3S 8½E 3700	2206 Annie Spring 19 313 6E 6018	1883 Idlandid Camp 33 208 318 5200
8 2272 221	22F6 2F7 21F13		18E9 Tipton 34 10S 35½E 5100	21D9 Still Creek 25 3S 81E 3700	22013 Billie Creek Oivide 30 368 5E 5300 2105 Hy Mountain 15 4 22 378 11E 5000	1989 Izon Summit 28 163 298 5293 1881 Rock Spring 23 188 328 5100 1981 Snow Mountain 1 198 268 6300
F 22F9	2F10 22F4 22F10 22F4 22F10	1751			21Fil Chomilt 21 27S 8E 4760 22024 Cold Springs Camp 12 35S 5E 6100	19E7 Starr Ridge 20 158 31E 5150
	22F(4) 22F9	Mothar Lote		WILLAMETTE WATERSHEDS (8)	20012 %Crazyman Flat 9 3hS 15E 6100	18Fh Stinking Water 33 218 3hE h800
North Company Ri	22F150 021F17	MALHEUR	LEGEND		22Fl9 Diamond-Crater Summit 34 285 6E 5800	Donne: Und Biltzen River
20005	22FITO Lake	IBF5	— 43°	Clockomos River	21G6 *Dog Hollow 1 40S 14E 4200	1602 Figh Crock h 33S 33E 7900
5 2 2	22F18 • 21F18 21F12 Silver	18F6	Wotershed Boundary	21D15 Blg Bottom 25 6S 7E 2118 21D13 Clackamae Lake 35 5S 8½E 340G	20014 *Finley Corrale 11 368 10E 6000 22012 Fournile Lake 9 363 5E 6000	1901 #Mart Mountain 1 363 25E 6350 1876 #Middle Crook 21 293 35E 5300
15-	17232 Context St. A X E H A	RNEY	Sub-wotershed Boundary	21D12 Clear Lake 29 4S 9E 3500	2104 Oorbor 12 393 13E 4850 22016 Hyatt Prairie Reservoir 15 398 3E 4900	1801 511v100 35 323 324E 6900 1807 wmym Lakn 31 3545 324E 6600
R GI 2261	2266 2225 Q 20613 Summer	[IGG] IG	Snow Course	21014 Peavine Ridge 14 & 15 6S 7E 3500	22026 Howard Prairie 32 383 48 4500	TOOL ALL MAIN
	52102 LANDE 2002	1862	O W Y H E E O COPCO Snow Station	21D8 Phlox Point 6 3S 9E 5600 21D9 Still Creek 25 3S 84E 3700 21D17 Timothy Lake 26 5S 8E 3295	2295 Park Hondquarters 8 318 68 6450	Trout on it Whitehorse Creeks
	22G9 22GI X L A M A T N 20GIZ	1668		21D17 Timothy Lake 26 5S 8E 3295	2006 Quartz Mountain 2 385 16E 5320	1866 *Conic Crock 14 418 348 6000 1841 Disaster Peak (Nev) 8 478 348 6500
G	2205 9 3 100 200 4 200 5 Werner	1867	1669		22013 Seven Lakes No. 2 26 335 5E 6200	1705 Wordgon Canyon 9 40S 40E 7240
POGUE JOSEPHINE PRODUC	22G13 22GT Upper 22G10 22G10 22G10	Lote to		Santiom River	20H1 *State Line (Cal) 21 48H 11E 5750	1805 WTrout Cruck 10 las 38E 7800
2262	28GIA 22GIS (Klamath L. 2IGS)	= = = = = = = = = = = = = = = = = = = =	Prin   42°	22El Detroit (town) 1 10S 52 1610 22E2 Ostroit Dam 7 10S 5E 1580	2032 Summer Rim 15 333 16E 7200	
22019	2261 Res 2068 Guanol Loke	17G5 17G4		21E6 Hogg Pass 24 13S 71E 4755	20013 Sycan Flat 25 315 148 5500	* ALPIAL SNOW DEPTH GAGI
2365 2363 22622 22620	82GI (20G9 20GI6	18G6 18G5 [IBH]	15H4 15H10015H2	21E4 Marion Forks 28 11S % 2/30 22E3 Mill City 29 9S 3E 826	2103 Taylor Lutte 16 338 IIE 5100	
0 E L 2364 22H 22G21	Lower Lower 20H2 20H1 Lake 20H3 WASHDE	HUMBOLOT	32 S 1 K 0 15H3	21E5 Santiam Junction 14 13S 72 3990 21E3 Whitewater Bridge 28 10S 7E 2175		
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G/A L	FORNI VA	17H40 17H3	ISMZ SMI	McKonzie River		
TY					MAP and I	NDEX to
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SCALE	IN MILES	•	1549	21E7 McKenzie 35 158 792 4000 22E5 McKenzie Bridge 13 168 5E 1372 28 168 2E 800	OREGON SNO	W COURSES
124' 123*	122' 121° 120°	119' 118' 117'	15 14	2256 Vida 28 168 28 600 21E9 White Branch Slide 15 168 7E 2800	OKLOOM DINO	



### The Following Organizations Cooperate in the Oregon Snow Survey Work

STATE

Idaho Cooperative Snow Surveys
Nevada Cooperative Snow Surveys
Oregon Agricultural Experiment Station
Oregon State Engineer and Corps of State Watermasters
Oregon State Highway Engineers
Soil Conservation Districts of Oregon

FEDERAL

Department of Agriculture
Cooperative Extension Service
Forest Service
Soil Conservation Service
Department of Commerce
Weather Bureau

Department of the Interior
Bonneville Power Administration
Bureau of Land Management
Bureau of Reclamation
Fish and Wildlife Service
Geological Survey
Indian Service
National Park Service

Department of National Defense Corps of Army Engineers

PUBLIC UTILITIES

California-Pacific Utilities Company Pacific Power and Light Company Portland General Electric Company The California Oregon Power Company

MUNICIPALITIES

City of Baker
City of La Grande
City of The Dalles
City of Walla Walla
IRRIGATION DISTRICTS

Associated Ditch Companies Central Oregon Irrigation District Deschutes County Municipal Improvement District East Fork Irrigation District Grants Pass Irrigation District Jordan Valley Irrigation District Lakeview Water Users, Incorporated Medford Irrigation District North Board of Control - Owyhee Project North Unit Irrigation District Ochoco Irrigation District Rogue River Valley Irrigation District South Board of Control - Owyhee Project Talent Irrigation District Vale-Oregon Irrigation District Warmsprings Irrigation District

PRIVATE ORGANIZATIONS
Amalgamated Sugar Company

The Crag Rats, Hood River, Oregon

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ROSS BLDG., 209 S.W. 5TH AVE.
PORTLAND 4. OREGON

OFFICIAL BUSINESS

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Federal - State - Private
COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"